

CASE

NUMBER:

99.242

INDEX FOR CASE: 99-242
BEAVER-ELKHORN WATER DISTRICT
Construct, Financing
WATER LINE EXTENSION-BILL HILL BRANCH AREA OF FLOYD COUNTY

IN THE MATTER OF THE APPLICATION FOR BEAVER-ELKHORN WATER
DISTRICT FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND
NECESSITY TO CONSTRUCT A WATER LINE EXTENSION INTO THE BILL
HALL BRANCH AREA OF FLOYD COUNTY AND APPROVAL OF FLOYD
COUNTY AND APPROVAL OF FINANCING PLAN

SEQ NBR	ENTRY DATE	REMARKS
0001	06/15/99	Application.
0002	06/17/99	Acknowledgement letter.
0003	07/09/99	Def. letter, info due 7/24
M0001	08/09/99	DWIGHT MARSHALL FLOYN CO ATTORNEY-REQUEST FOR WAIVER
0004	08/17/99	Def. cured letter
0005	09/14/99	FINAL ORDER GRANTING CONSTRUCTION; APPROVES PROPOSED FINANCING PLAN



COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KY. 40602
(502) 564-3940

CERTIFICATE OF SERVICE

RE: Case No. 99-242
BEAVER-ELKHORN WATER DISTRICT

I, Stephanie Bell, Secretary of the Public Service Commission, hereby certify that the enclosed attested copy of the Commission's Order in the above case was served upon the following by U.S. Mail on September 14, 1999.

Parties of Record:

Hubert Halbert
Chairman
Beaver-Elkhorn Water District
P. O. Box 769
Martin, KY. 41649

Honorable Dwight Stacy Marshall
Attorney at Law
195 South Lake Drive
Prestonsburg, KY. 41653

Stephanie J. Bell

Secretary of the Commission

SB/sa
Enclosure

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF BEAVER-ELKHORN)
WATER DISTRICT FOR A CERTIFICATE OF)
PUBLIC CONVENIENCE AND NECESSITY TO) CASE NO. 99-242
CONSTRUCT A WATER LINE EXTENSION INTO)
THE BILL HALL BRANCH AREA OF FLOYD)
COUNTY AND APPROVAL OF FINANCING PLAN)

O R D E R

On June 15, 1999, Beaver-Elkhorn Water District ("Beaver-Elkhorn") applied for a Certificate of Public Convenience and Necessity to construct a \$379,751 waterworks improvement project and for approval of its plan for financing the project.

By letter dated July 9, 1999, Beaver-Elkhorn was notified that its filing was deficient in certain filing requirements and was requested to file the information within 15 days. On August 5, 1999, Beaver-Elkhorn filed a letter, which the Commission will treat as a motion, requesting permission to deviate from the deficient filing requirements set out in the Commission's letter of July 9, 1999.

The proposed project involves the construction of 11,940 linear feet of 4-inch polyvinyl chloride ("PVC") water transmission main, a 20,000 gallon skid tank, a 50 gallon per minute ("GPM") booster pumping station and a supervisory control and data acquisition ("SCADA") system to provide service to 42 new customers along Bill Hall Branch. Project funding is a \$284,751 grant from the Section 531 PRIDE program and a \$95,000

contribution from the applicant. Plans and specifications for the proposed improvements prepared by Summit Engineering, Inc., of Pikeville, Kentucky, have been approved by the Division of Water of the Natural Resources and Environmental Protection Cabinet.

The Commission, having reviewed the evidence of record and being otherwise sufficiently advised, finds that:

1. Beaver-Elkhorn's motion to deviate from the deficient filing requirements should be granted.
2. Public convenience and necessity require that the construction proposed be performed and that a Certificate of Public Convenience and Necessity be granted.
3. The proposed construction consists of 11,940 linear feet of 4-inch PVC water transmission main, a 20,000 gallon skid tank, a 50 GPM booster pumping station and a SCADA system.
4. Beaver-Elkhorn should obtain approval from the Commission prior to performing any additional construction not expressly authorized by this Order.
5. Any deviation from the construction or financing plan approved should be undertaken only with the prior approval of the Commission.
6. Beaver-Elkhorn should furnish documentation of the total costs of this project including the cost of construction and all other capitalized costs (engineering, legal, administrative, etc.) within 60 days of the date that construction is substantially completed. Construction costs should be classified into appropriate plant accounts in accordance with the Uniform System of Accounts for water utilities prescribed by the Commission.

7. Beaver-Elkhorn should require construction to be inspected under the general supervision of a professional engineer with a Kentucky registration in civil or mechanical engineering.

8. The financing plan proposed by Beaver-Elkhorn is for lawful objects within the corporate purpose of its utility operation, is necessary and appropriate for and consistent with the proper performance of its service to the public, will not impair its ability to perform that purpose, should therefore be approved.

IT IS THEREFORE ORDERED that:

1. Beaver-Elkhorn's motion to deviate from the deficient filing requirements is granted.

2. Beaver-Elkhorn is granted a Certificate of Public Convenience and Necessity to proceed with the proposed construction project consisting of 11,940 linear feet of 4-inch PVC water transmission main, a 20,000 gallon skid tank, a 50 GPM booster pumping station and a SCADA system.

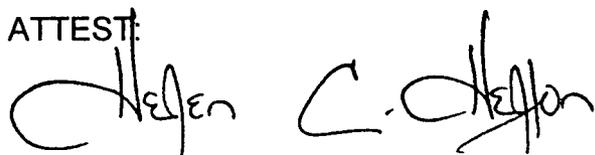
3. Beaver-Elkhorn shall comply with the requirements contained in Findings 3 through 6 as if the same were individually so ordered.

4. The financing plan proposed by Beaver-Elkhorn is hereby approved.

Done at Frankfort, Kentucky, this 14th day of September, 1999.

By the Commission

ATTEST:

A handwritten signature in black ink, appearing to read "Stephen C. Jefferson". The signature is written in a cursive style with a horizontal line underneath the name.

Executive Director



COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KY. 40602
(502) 564-3940

August 17, 1999

Hubert Halbert
Chairman
Beaver-Elkhorn Water District
P. O. Box 769
Martin, KY. 41649

Honorable Dwight Stacy Marshall
Attorney at Law
195 South Lake Drive
Prestonsburg, KY. 41653

RE: Case No. 99-242
BEAVER-ELKHORN WATER DISTRICT

The Commission staff has reviewed your response of August 9, 1999 and has determined that your application in the above case now meets the minimum filing requirements set by our regulations. Enclosed please find a stamped filed copy of the first page of your filing. This case has been docketed and will be processed as expeditiously as possible.

If you need further information, please contact my staff at 502/564-3940.

Sincerely,

A handwritten signature in cursive script that reads "Stephanie Bell".

Stephanie Bell
Secretary of the Commission

SB/sa
Enclosure

Beaver - Elkhorn Water District

ORGANIZED UNDER CHAPTER 74, KENTUCKY REVISED STATUTE

Box 769

Martin, Kentucky 41649

TELEPHONES:

OFFICE 285-3858

ALLEN PLANT 874-2007

June 11, 1999

FILED

AUG 09 1999
PUBLIC SERVICE
COMMISSION

RECEIVED

JUN 15 1999

PUBLIC SERVICE
COMMISSION

Ms. Helen Helton
Executive Director
Public Service Commission
730 Schenkel Lane
P.O. Box 615
Frankfort, Kentucky 40601

Dear Ms. Helton:

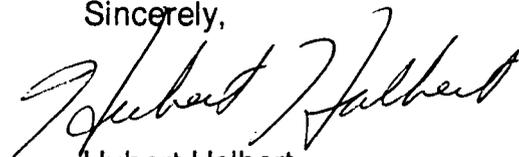
CASE 99-242

Enclosed please find the original and eleven (11) copies of Beaver-Elkhorn Water District's application for a Certificate of Public Convenience and Necessity to construct a water line extension into the Bill Hall Branch area of Floyd County and approval of the financing plan under KRS 278.020 (1), 807 KAR 5:001 Sections 8 and 9 (2). In addition, the District is including three (3) complete sets of plans and specifications for this project for your review.

Due to the nature and condition of the existing water supply in the area, the District requests that this application be reviewed and approved as soon as possible.

If you have any questions, please feel free to contact Mr. Kevin Howard with Summit Engineering, Inc at 606-264-9860 or Eric Ratliff with Big Sandy Area Development at 606-886-2374.

Sincerely,



Hubert Halbert
Chairman

Enclosure



OFFICE OF THE

Floyd County Attorney

Commonwealth of Kentucky

(606) 886-9144 or (606) 886-6863

PUBLIC SERVICE
COMMISSION

AUG 9 1999

P. O. Box 1000
Prestonsburg, Kentucky 41653

KEITH BARTLEY
County Attorney

August 5, 1999

Public Service Commission
Attention: Ms. Stephanie Bell
Secretary of the Commission
730 Schenkel Lane
P.O. Box 615
Frankfort, KY. 40602

**RE: The Floyd County/Beaver Elkhorn Water District/Bill Hall Branch
Water Project Case No.: 99-242**

To the Secretary of the Commissioner:

This letter comes as a follow-up to the letter dated July 9, 1999 received by the Beaver Elkhorn Water District and the Floyd County Attorney's Office.

At that time, I contacted the Public Service Commission and was informed that these filing deficiencies needed to be satisfied before the Public Service Commission could proceed with the acceptance of the application. The request made in this letter raised questions for the water district and all parties working on this project.

It was the water district's understanding that it had complied with the requirements which were provided to them by the Public Service Commission and that the Big Sandy Area Development District reviewed the application and agreed that they satisfied the filing requirements made by the Public Service Commission, (copy of filing requirements enclosed as provided by the Public Service Commission).

As such, it is the position of the Water District and the County of Floyd that the requirements which were addressed in the application filed by the Beaver Elkhorn Water District are in compliance with the request originally made by the Public Service Commission.

August 5, 1999
Page -2-
Public Service Commission
Attention: Ms. Stephanie Bell

**RE: The Floyd County/Beaver Elkhorn Water District/Bill Hall Branch
Water Project Case No.: 99-242**

However, if the Public Service Commission is requesting that these additional filing requirements, as set out in the letter dated July 9, 1999 be complied with, the Beaver Elkhorn Water District is requesting a waiver of the need to comply with the specificity of these filing requirements.

I was informed by Mr. Scott Lawless from the Public Service Commission that I could request a waiver from the accounting related requirements and that it should be granted. As such, I am making that request at this time.

Additionally, there are questions pertaining to the preliminary engineering report. It was the Water District's understanding, based on the information provided to it and supported by the information from the Big Sandy Area Development District, that the filing requirements requested pertaining to the preliminary engineering report had already been addressed by the engineer to the satisfaction of the Public Service Commission. However, again if this is incorrect, please notify our office as soon as possible.

In conclusion, at this time, we would request that the Public Service Commission respond to this letter and inform the Beaver Elkhorn Water District if there are any additional filing requirements which need to be addressed that cannot be waived. If there are additional requirements, we request that they be set out so that we can properly answer them to the satisfaction of the Public Service Commission to enable this water project to proceed as planned and service the needs of the Floyd County citizens.

Sincerely,



DWIGHT S. MARSHALL
Assistant Floyd County Attorney

DSM/lf

pc: file

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY - CONSTRUCTION**Filing Requirements Checklist**

(Applicable Authority: KRS 278.020(1), 807 KAR 5:001,
Sections 8 and 9(2)) 10 (LATE CASE)

Law/Regulation**Filing Requirement****807 KAR 5:001:****Section 8(1)**

Full name and post office address of applicant and a reference to the particular provision of law requiring Commission approval.

Section 8(2)

The original and 10 copies of the application with an additional copy for any party named therein as an interested party.

Section 8(3)

If applicant is a corporation, a certified copy of the Articles of Incorporation and all amendments thereto or if the articles were filed with the PSC in a prior proceeding, a reference to the style and case number of the prior proceeding.

Section 9(2)

(a) The facts relied upon to show that the proposed new construction is or will be required by public convenience or necessity.

(b) Copies of franchises or permits, if any, from the proper public authority for the proposed new construction or extension, if not previously filed with the commission.

Law/Regulation

807 KAR 5:001, Section 9(2)

Filing Requirement

(c) A full description of the proposed location, route, or routes of the new construction or extension, including a description of the manner in which same will be constructed, and also the names of all public utilities, corporations, or persons with whom the proposed new construction or extension is likely to compete.

(d) Three (3) maps to suitable scale (preferably not more than two (2) miles per inch) showing the location or route of the proposed new construction or extension, as well as the location to scale of any like facilities owned by others located anywhere within the map area with adequate identification as to the ownership of such other facilities.

(e) The manner, in detail, in which it is proposed to finance the new construction or extension.

(f) An estimated cost of operation after the proposed facilities are completed.

(g) Other information necessary to afford the commission a complete understanding of the situation.



COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION
730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KENTUCKY 40602
www.psc.state.ky.us
(502) 564-3940
Fax (502) 564-3460

Ronald B. McCloud, Secretary
Public Protection and
Regulation Cabinet

Helen Helton
Executive Director
Public Service Commission

Paul E. Patton
Governor

July 9, 1999

Hubert Halbert
Chairman
Beaver-Elkhorn Water District
P.O. Box 769
Martin, KY 41649

Dwight Stacy Marshall
Attorney at Law
195 South Lake Drive
Prestonsburg, KY 41653

Re: Case No. 99-242
Filing Deficiencies

Gentlemen:

The Commission staff has conducted an initial review of your filing in the above case. This filing is rejected pursuant to 807 KAR 5:001, Section 2, as it is deficient in certain filing requirements. The items listed below are either required to be filed with the application or must be referenced if they are already on file in another case or will be filed at a later date.

Filing deficiencies pursuant to 807 KAR 5:001:

- 1) Section 9(2)(f): An estimated cost of operation after the proposed facilities are completed.
- 2) KRS 322.340: At least one copy of preliminary and final engineering report is signed, sealed, and dated by registered professional engineer.
- 3) Section 11(1)(a): Description of applicant's property.



AN EQUAL OPPORTUNITY EMPLOYER M/F/D

- 4) Section 11(1)(a): Statement of original cost of applicant's property and the cost to the applicant, if different.
- 5) Section 11(2)(b): Copies of all trust deeds or mortgages. If previously filed, state case number.
- 6) Section 11(2)(c): Detailed estimates by USOA account number.
- 7) Section 6(4): Mortgages: Date of Execution, Name of Mortgagor, Name of Mortgagee or Trustee, Amount of Indebtedness Secured, Sinking Fund Provisions.
- 8) Section 6(5): Bonds: Amount Authorized, Amount Issued, Name of Utility Who Issued, Description of Each Class Issued, Date of Issue, Date of Maturity, How Secured, Interest Paid in Last Fiscal Year.
- 9) Section 6(6): Notes Outstanding: Date of Issue, Amount, Maturity Date, Rate of Interest, In Whose Favor, Interest Paid in Last Fiscal Year.
- 10) Section 6(7): Other Indebtedness: Description of Class, How Secured, Description of Any Assumption Of Indebtedness by Outside Party (i.e., any transfers), Interest Paid in Last Fiscal Year.
- 11) Section 6(9): Detailed income statement and balance sheet.

The statutory time period in which the Commission must process this case will not commence until the above-mentioned information is filed with the Commission. You are requested to file 10 copies of this information within 15 days of the date of this letter. If you need further information, please contact James Rice of my staff at (502)564-3940, ext. 411.

Sincerely,



Stephanie Bell
Secretary of the Commission

sa





COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION
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FRANKFORT, KENTUCKY 40602
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Ronald B. McCloud, Secretary
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Helen Helton
Executive Director
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July 9, 1999

Hubert Halbert
Chairman
Beaver-Elkhorn Water District
P.O. Box 769
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Sincerely,



Stephanie Bell
Secretary of the Commission

sa





COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KY. 40602
(502) 564-3940

June 17, 1999

Hubert Halbert
Chairman
Beaver-Elkhorn Water District
P. O. Box 769
Martin, KY. 41649

Honorable Dwight Stacy Marshall
Attorney at Law
195 South Lake Drive
Prestonsburg, KY. 41653

RE: Case No. 99-242
BEAVER-ELKHORN WATER DISTRICT
(Construct, Financing) WATER LINE EXTENSION

This letter is to acknowledge receipt of initial application in the above case. The application was date-stamped received June 15, 1999 and has been assigned Case No. 99-242. In all future correspondence or filings in connection with this case, please reference the above case number.

If you need further assistance, please contact my staff at 502/564-3940.

Sincerely,

A handwritten signature in cursive script that reads "Stephanie Bell".

Stephanie Bell
Secretary of the Commission

SB/jc

Beaver - Elkhorn Water District

ORGANIZED UNDER CHAPTER 74, KENTUCKY REVISED STATUE

Box 769

Martin, Kentucky 41648

TELEPHONES:

OFFICE 285-3858

ALTERNATE 874-2007

June 11, 1999

FILED

AUG 09 1999

PUBLIC SERVICE
COMMISSION

RECEIVED

JUN 15 1999

PUBLIC SERVICE
COMMISSION

Ms. Helen Helton
Executive Director
Public Service Commission
730 Schenkel Lane
P.O. Box 615
Frankfort, Kentucky 40601

Dear Ms. Helton:

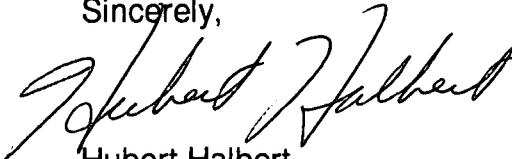
CASE 99-242

Enclosed please find the original and eleven (11) copies of Beaver-Elkhorn Water District's application for a Certificate of Public Convenience and Necessity to construct a water line extension into the Bill Hall Branch area of Floyd County and approval of the financing plan under KRS 278.020 (1), 807 KAR 5:001 Sections 8 and 9 (2). In addition, the District is including three (3) complete sets of plans and specifications for this project for your review.

Due to the nature and condition of the existing water supply in the area, the District requests that this application be reviewed and approved as soon as possible.

If you have any questions, please feel free to contact Mr. Kevin Howard with Summit Engineering, Inc at 606-264-9860 or Eric Ratliff with Big Sandy Area Development at 606-886-2374.

Sincerely,



Hubert Halbert
Chairman

Enclosure

Cc: Mr. Dwight Stacy Marshall
Attorney at Law
195 South Lake Drive
Prestonsburg, Kentucky 41653

Mr. Kevin Howard, P.E.
Summit Engineering, Inc.
120 Prosperous Place, Suite 101
Lexington, Kentucky 40509

Mr. Eric Ratliff
Big Sandy Area Development District
100 Resource Drive
Prestonsburg, Kentucky 41653

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION FOR BEAVER-ELKHORN WATER)
DISTRICT FOR A CERTIFICATE OF PUBLIC)
CONVENIENCE AND NECESSITY TO)
CONSTRUCT A WATER LINE EXTENSION INTO)
THE BILL HALL BRANCH AREA OF FLOYD)
COUNTY AND APPROVAL OF FINANCING PLAN)

CASE NO. 99-242

APPLICATION

Beaver-Elkhorn Water District ("Applicant") respectfully states:

1. That Applicant is a water district organized under Chapter 74 of the Kentucky Revised Statutes and operates a water treatment plant and distribution system in Floyd County, a Public Utility, that serves approximately 2,610 commercial and residential customers.
2. That the Applicant's address is Beaver-Elkhorn Water District, c/o Hubert Halbert, Chairman, P.O. Box 769, Martin, Kentucky 41649.
3. That the Applicant proposes to construct a water line extension project that will consist of 11,940 LF of 4" water line, 1 – 20,000 gallon skid tank, 42 water meter sets with related appurtenances, 1 – 50 GPM water booster pumping station and a supervisory control and data acquisition system for one (1) pump station and one (1) water storage tank that will serve approximately 42 residents in Bill Hall Branch near McDowell, Kentucky (Floyd County).
4. That the project will replace resident's ground water supplies that have been degraded by prior industrial activities.
5. That the proposed construction will be financed by a Section 531 PRIDE grant of \$284,751, Beaver-Elkhorn Water District in-kind labor in the amount of \$80,000 and in-kind land donation in the amount of \$15,000.
6. The estimated cost of operation, maintenance, repair, rehabilitation and replacement is \$1,000 per year that will be escrowed to cover these costs.
7. That the Project will not require the Applicant to increase its existing water rate structure.

8. That the Applicant intends to construct the Project in accordance with the Commission's minimum construction standards.
9. That the following Exhibits in support of this Application are attached hereto:
 - A. Copy of the Project Cooperation Agreement with the U.S. Corps of Engineers.
 - B. Applicant's letter of intent to provide required match.
 - C. Copy of Financing Plan, Financial Capacity Analysis and District Assessment prepared by Engineer.
 - D. Division of Water Approval Letter.
 - E. Certified Statement from Chairman of Beaver-Elkhorn Water District.

Wherefore, Applicant requests the Commission the following:

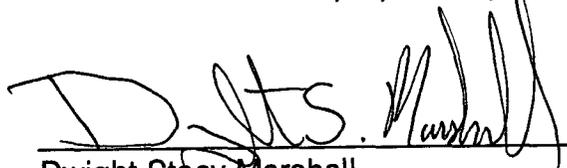
- a. issue a Certificate of Public Convenience and Necessity authorizing said Applicant to install water line, water storage tank, pumping station and other appurtenances necessary to supply potable drinking water to the resident of Bill Hall Branch.
- b. to authorize and approve the propose financing plan secured by Applicant.

Respectfully submitted,

Beaver-Elkhorn Water District

By: 
Chairman
Board of Water Commissioners

This Instrument was prepared by:



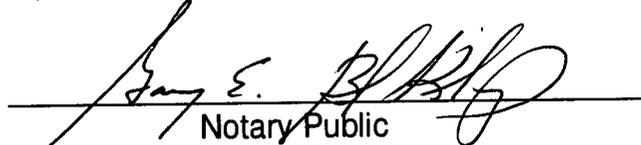
Dwight Stacy Marshall
Attorney-at-Law
195 South Lake Drive
Prestonsburg, Kentucky 41653
(606) 886-1428

COMMONWEALTH OF KENTUCKY

COUNTY OF FLOYD

Subscribed, sworn to and acknowledged before me on this the 11th
day of JUNE 1999 by Hubert Halbert, Chairman of the Beaver-Elkhorn
Water District of Floyd County, on behalf of the Water District.

My Commission expires: 1-22-2002



Notary Public
In and for said County and State

**PROJECT COOPERATION AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
BEAVER ELKHORN WATER DISTRICT
FOR CONSTRUCTION OF THE
BILL HALL BRANCH WATER LINE EXTENSION
FLOYD COUNTY, KENTUCKY**

THIS AGREEMENT is entered into this _____ day of _____, _____, by and between the DEPARTMENT OF THE ARMY (hereinafter the "Government"), represented by the Assistant Secretary of the Army (Civil Works), and Beaver Elkhorn Water District (hereinafter the "Non-Federal Sponsor"), represented by its Chairman of the Beaver Elkhorn Board of Directors

WITNESSETH, THAT:

WHEREAS, the Secretary of the Army is authorized to provide design and construction assistance for water-related environmental infrastructure and resource protection and development projects pursuant to Section 531 of the Water Resources Development Act of 1996 (Public Law 104-303) (hereinafter the Section 531 program);

WHEREAS, the Bill Hall Branch Water Line Extension Project, Floyd County, Kentucky (hereinafter the "Project", as defined in Article I.A. of this Agreement) has been identified as a Section 531 program project;

WHEREAS, the Government and the Non-Federal Sponsor desire to enter into a Project Cooperation Agreement for the construction of the Project;

WHEREAS, the Section 531 program specifies the cost-sharing requirements applicable to the Project;

WHEREAS, the Section 531 program provides that the Secretary of the Army shall not provide assistance for any water-related environmental infrastructure and resource protection and development projects, or separable element thereof, until each non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

WHEREAS, pursuant to the Section 531 program, the Secretary of the Army is authorized to provide the Federal share in the form of grants or reimbursements to the Non-Federal Sponsor and to afford credit for the reasonable costs of design work completed by the non-Federal interest before entering into a written agreement with the Secretary; and

WHEREAS, the Government and Non-Federal Sponsor have the full authority and capability to perform as hereinafter set forth and intend to cooperate in cost-sharing and financing of the construction of the Project in accordance with the terms of this Agreement.

NOW, THEREFORE, the Government and the Non-Federal Sponsor agree as follows:

ARTICLE I - DEFINITIONS AND GENERAL PROVISIONS

For purposes of this Agreement:

A. The term "Project" shall mean the construction of Bill Hall Branch Water Line Extension Project, Floyd County, Kentucky, as generally described in the Plans and Specifications for the Bill Hall Branch Water Line Extension Project, dated April 13, 1999. Work includes installation of 11,940 LF of 4" water line, a 20,000 GAL skid tank, 42 water meter sets with related appurtenances, a water booster pumping station (50 GPM), and a supervisory control and data acquisition system for 1 pump station and 1 water storage tank.

B. The term "total project costs" shall mean all costs incurred by or on behalf of the Non-Federal Sponsor and by the Government in accordance with the terms of this Agreement directly related to project construction. Subject to the provisions of this Agreement, the term shall include, but is not necessarily limited to: the costs of project design and construction work; the value of lands, easements, rights-of-way, relocations, and suitable borrow and dredged or excavated material disposal areas, for which the Government affords credit toward total project costs in accordance with Article IV of this Agreement; the costs of participation in the Project Coordination Team in accordance with Article V of this Agreement; applicable costs of audit in accordance with Article XI of this Agreement; and other costs incurred by the Government pursuant to this Agreement. The term does not include any costs for operation, maintenance, repair, rehabilitation, or replacement; any costs due to betterments; any costs incurred in advertising and awarding any construction contracts prior to the effective date of this Agreement; any actual construction costs incurred prior to the effective date of this Agreement; or any costs of dispute resolution under Article VIII of this Agreement.

C. The term "project design work" shall mean all work performed by the Non-Federal Sponsor for design directly related to the Project, including the reasonable costs of design work completed prior to the effective date of this Agreement. The term includes, but is not necessarily limited to, concept design; report writing; detailed design; preparation of plans and specifications; design analysis; quantity/cost estimates; obtaining required local, state and Federal permits; performance and documentation of environmental, hazardous substances, and historical investigations; engineering and design during construction; and other design services and in-kind design work.

D. The term "project design and construction work" shall mean all work performed by the Non-Federal Sponsor for design and construction directly related to the Project subsequent to

the effective date of this Agreement. The term includes, but is not necessarily limited to, project design work as defined in paragraph C. of this Article; actual construction, including settlement of or paying awards for contract disputes; supervision and administration; and other construction services and in-kind construction work.

E. The term "highway" shall mean any public highway, roadway, street, or way, including any bridge thereof.

F. The term "relocation" shall mean providing a functionally equivalent facility to the owner of an existing utility, cemetery, highway or other public facility, or railroad (including any bridge thereof) when such action is authorized in accordance with applicable legal principles of just compensation or as otherwise provided in the authorizing legislation for the Project or any report referenced therein. Providing a functionally equivalent facility may take the form of alteration, lowering, raising, or replacement and attendant removal of the affected facility or part thereof.

G. The term "period of construction" shall mean the time period from execution of this Agreement until completion of Project construction, as verified by Government inspection in accordance with Article II.B.1. of this Agreement.

H. The term "fiscal year" shall mean one fiscal year of the Government. The Government fiscal year begins on October 1 and ends on September 30.

I. The term "functional portion of the Project" shall mean a portion of the Project that the Project Coordination Team determines is suitable for the Non-Federal Sponsor to operate and maintain in advance of completion of the entire Project. For a portion of the project to be suitable, the Project Coordination Team must determine that the portion of the Project is complete and can function independently and for a useful purpose, although the balance of the Project is not complete.

J. The term "betterment" shall mean a change in the design and construction of an element of the Project resulting from the application of standards that the Government determines exceed those that the Government would otherwise apply for accomplishing the design and construction of that element.

M. The term "proper invoice" shall mean a request for reimbursement by the Non-Federal Sponsor in which the Non-Federal Sponsor certifies that it has made payments in the amount requested to, or been billed in the amount requested by, its contractors, suppliers or employees for performance of work in accordance with this Agreement and provides evidence of payment made or obligation incurred by the Non-Federal Sponsor as may be required by the Government.

ARTICLE II - OBLIGATIONS OF THE PARTIES

A. Obligations of the Non-Federal Sponsor.

1. The Non-Federal Sponsor shall expeditiously construct the Project. The Non-Federal Sponsor assumes full and exclusive responsibility for construction of the Project.

a. The Government shall be afforded the opportunity to review and comment on the solicitations for all contracts, including relevant plans and specifications, prior to the Non-Federal Sponsor's issuance of such solicitations. In the event that the Non-Federal Sponsor proposes to do work with its own forces, the Government shall be afforded the opportunity to review and approve the plan of work and materials to be incorporated into the work. In addition, to the maximum extent practicable, the Government shall be afforded the opportunity to review and comment on all contract modifications, including change orders, prior to the issuance to the contractor of a Notice to Proceed. In any instance where providing the Government with notification of a contract modification or change order is not possible prior to issuance of the Notice to Proceed, the Non-Federal Sponsor shall provide such notification in writing at the earliest date possible. To the extent possible, the Non-Federal Sponsor also shall afford the Government the opportunity to review and comment on all contract claims prior to resolution thereof. The Non-Federal Sponsor shall consider in good faith the comments of the Government made as a result of its non-technical review, but the contents of solicitations, award of contracts, execution of contract modifications, issuance of change orders, resolution of contract claims, and performance of all work on the Project (whether the work is performed under contract or by Non-Federal Sponsor personnel), shall be exclusively within the control of the Non-Federal Sponsor.

b. The Non-Federal Sponsor shall obtain all necessary permits and licenses and comply with all applicable laws, regulations, ordinances and other rules of the United States of America, of the state or political subdivisions thereof wherein the work is done, or of any other duly constituted public authority, including the laws and regulations specified in Article XII of this Agreement and where applicable shall include appropriate provisions in its contracts for construction of the Project.

2. In the event that the Non-Federal Sponsor elects to construct betterments during the period of construction, the Non-Federal Sponsor shall notify the Government in writing and describe the betterments it intends to construct. The Non-Federal Sponsor shall be solely responsible for all costs due to betterments, including costs associated with obtaining permits therefor, and shall pay all such costs without reimbursement by the Government.

3. As further specified in Article III of this Agreement, the Non-Federal Sponsor shall acquire all lands, easements, rights-of-way, and suitable borrow and dredged or excavated material disposal areas required for the construction, operation, maintenance, repair, rehabilitation, and replacement of the Project, and shall perform or ensure performance of all

relocations that the Non-Federal Sponsor and the Government determine are necessary for the construction, operation, maintenance, repair, rehabilitation, and replacement of the Project.

4. The Non-Federal Sponsor may request the Government to acquire lands, easements, rights-of-way, and suitable borrow and dredged or excavated material disposal areas or perform relocations on behalf of the Non-Federal Sponsor during the period of construction. Such requests shall be in writing and shall describe the services requested to be performed. If in its sole discretion the Government elects to perform the requested services or any portion thereof, it shall so notify the Non-Federal Sponsor in a writing that sets forth any applicable terms and conditions, which must be consistent with this Agreement. In the event of conflict between such a writing and this Agreement, this Agreement shall control. The Non-Federal Sponsor shall be solely responsible for all costs of the requested services and shall pay all such costs in accordance with Article VI.C. of this Agreement. Notwithstanding the acquisition of lands, easements, rights-of-way, and suitable borrow and dredged or excavated material disposal areas or performance of relocations by the Government, the Non-Federal Sponsor shall be responsible, as between the Government and the Non-Federal Sponsor, for the costs of cleanup and response of hazardous substances in accordance with Article XVI of this Agreement.

5. During the period of construction, the Non-Federal Sponsor shall prepare and furnish to the Government for review a proposed Operation, Maintenance, Repair, Rehabilitation and Replacement Manual. The Non-Federal Sponsor shall operate, maintain, repair, rehabilitate, and replace any functional portion of the Project and, upon completion of construction and final inspection by the Government as provided for by Article II.B.1. of this Agreement, the entire completed Project, at no cost to the Government, in a manner compatible with the Project's design and its Operation, Maintenance, Repair, Rehabilitation and Replacement Manual, and in accordance with applicable Federal and State laws as provided in Article XII of this Agreement. The failure of the Non-Federal Sponsor to prepare an Operation, Maintenance, Repair, Rehabilitation and Replacement Manual acceptable to the Government shall not relieve the Non-Federal Sponsor of its responsibilities for operation, maintenance, repair, rehabilitation, and replacement of the completed project, or any functional portion thereof, in accordance with this paragraph.

B. Obligations of the Government.

1. The Government may perform periodic inspections to verify the progress of construction, shall perform a final inspection to verify the completion of construction, and may provide technical assistance to the Non-Federal Sponsor on an as-needed basis until the end of the period of construction.

2. Subject to paragraphs B.4. and B.5. of this Article, the Government in accordance with Article VI.B. of this Agreement, shall contribute 75 percent of total project costs on a cumulative basis by reimbursing the Non-Federal Sponsor for project costs that are incurred by or on behalf of the Non-Federal Sponsor, including project costs incurred by the Non-Federal Sponsor using grants from State or local agencies.

3. Upon completion of the period of construction or termination of this Agreement, the Government shall perform a final accounting in accordance with Article VI.D. of this Agreement to determine the contributions provided by the Government toward total project costs and to determine whether the Government has met its obligations under paragraph B.2. of this Article.

4. Except as provided in Article VII.A. of this Agreement, the Government shall not reimburse the Non-Federal Sponsor for total project costs that are incurred by the Non-Federal Sponsor using Federal funds.

5. As of the effective date of this Agreement, \$7,000,000 of Federal funds have been appropriated for the Section 531 program. The Government makes no commitment to seek additional Federal funds for the Section 531 program. Notwithstanding any other provision of this Agreement, the Government's share of total project costs, when added to the costs incurred by the Government for other elements of the Section 531 program, shall not exceed the total amount of Federal funds that heretofore have been appropriated and hereafter may be appropriated or otherwise made available for the Section 531 program. Notwithstanding any other provision of this Agreement, the Non-Federal Sponsor shall pay all total project costs above the Government's share of total project costs.

ARTICLE III - LANDS, RELOCATIONS, AND PUBLIC LAW 91-646 COMPLIANCE

A. The Non-Federal Sponsor and the Government shall determine the lands, easements, and rights-of-way required for construction, operation, maintenance, repair, rehabilitation and replacement of the Project, including those required for relocations, borrow materials, and dredged or excavated material disposal. Prior to issuance of solicitation for each construction contract, the Non-Federal Sponsor shall acquire all such lands, easements, and rights-of-way necessary for that contract and certify in writing to the Government that said interests have been acquired. Furthermore, for purposes of inspection, the Non-Federal Sponsor shall provide the Government with authorization for entry to all lands, easements, and rights-of-way the Non-Federal Sponsor has provided.

B. The Non-Federal Sponsor and the Government shall determine the improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material associated with the construction, operation, maintenance, repair, rehabilitation and replacement of the Project. Such improvements may include, but are not necessarily limited to, retaining dikes, wasteweirs, bulkheads, embankments, monitoring features, stilling basins, and de-watering pumps and pipes. Prior to the issuance of any solicitation for construction where the disposal of dredged or excavated material associated with the construction is anticipated, the Non-Federal Sponsor shall provide the Government with copies of all permits obtained for the disposal of dredged or excavated materials and with plans and specifications of such

improvements in detail sufficient for the Government to review and comment in accordance with Article II.A.1.a. of this Agreement.

C. The Non-Federal Sponsor and the Government shall determine the relocations necessary for the construction, operation, maintenance, repair, replacement and rehabilitation, of the Project, including those necessary to enable the removal of borrow materials and the disposal of dredged or excavated material. Prior to issuance of solicitation for each construction contract, the Non-Federal Sponsor shall perform or ensure the performance of all such relocations necessary for that contract. The Non-Federal Sponsor shall be responsible for preparing or ensuring the preparation of plans and specifications for all relocations determined necessary.

D. The Non-Federal Sponsor in a timely manner shall provide the Government with such documents as are sufficient to enable the Government to determine the value of any contribution provided during the period of construction pursuant to paragraphs A., B., or C. of this Article. Upon receipt of such documents the Government, in accordance with Article IV of this Agreement and in a timely manner, shall determine the value of such contribution and shall include such value in total project costs.

E. The Non-Federal Sponsor shall comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 C.F.R. Part 24, and shall inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

ARTICLE IV - VALUE OF LANDS AND RELOCATIONS, AND DISPOSAL AREAS

A. The Non-Federal Sponsor shall receive credit toward its share of total project costs for the value of the lands, easements, rights-of-way, and suitable borrow and dredged or excavated material disposal areas that the Government and the Non-Federal Sponsor jointly determine must be provided by the Non-Federal Sponsor pursuant to Article III of this Agreement and the value of the relocations that the Government and the Non-Federal Sponsor jointly determine must be performed by the Non-Federal Sponsor, or for which it must ensure performance, pursuant to Article III of this Agreement. The Non-Federal Sponsor also shall receive credit for all reasonable costs associated with obtaining permits necessary for the placement of the Project on publicly owned or controlled lands. The credit to be afforded the Non-Federal Sponsor for such contributions shall not exceed 25 percent of total project costs. However, the Non-Federal Sponsor shall not receive credit for the value of any lands, easements, rights-of-way, relocations, or borrow or dredged or excavated material disposal areas that have been provided previously as an item of cooperation for another Federal project. The Non-Federal Sponsor also shall not receive credit for the value of lands, easements, rights-of-way, relocations, or borrow and dredged or excavated material disposal areas to the extent that such

items are provided using Federal funds unless the Federal granting agency verifies in writing that such inclusion is expressly authorized by statute.

B. The value of lands, easements, and rights-of-way, including those necessary for relocations and borrow materials, and dredged or excavated material disposal, that are included in total project costs shall be the appraised fair market value of the real property interests, plus certain incidental costs of acquiring those interests, as determined in accordance with the provisions of this paragraph.

1. Date of Valuation. The fair market value of lands, easements, or rights-of-way owned by the Non-Federal Sponsor on the effective date of this Agreement shall be the fair market value of such real property interests as of the date the Non-Federal Sponsor awards the first construction contract for the Project or, if the Non-Federal Sponsor performs the construction with its own labor, the date that the Non-Federal Sponsor begins construction of the Project. The fair market value of lands, easements, or rights-of-way acquired by the Non-Federal Sponsor after the effective date of this Agreement shall be the fair market value of such real property interests at the time the interests are acquired.

2. General Valuation Procedure. Except as provided in paragraph B.3. of this Article, the fair market value of lands, easements, or rights-of-way shall be the appraised fair market value as determined in accordance with paragraph B.2.a. of this Article, unless thereafter a different amount is determined to represent fair market value in accordance with paragraph B.2.b. or paragraph B.5. of this Article.

a. The Non-Federal Sponsor shall obtain, for each real property interest, an appraisal that is prepared by a qualified appraiser who is acceptable to the Non-Federal Sponsor and the Government. The appraisal must be prepared in accordance with the applicable rules of just compensation, as specified by the Government. The fair market value shall be the amount set forth in the Non-Federal Sponsor's appraisal, if such appraisal is approved by the Government. In the event the Government does not approve the Non-Federal Sponsor's appraisal, the Non-Federal Sponsor may obtain a second appraisal, and the fair market value shall be the amount set forth in the Non-Federal Sponsor's second appraisal, if such appraisal is approved by the Government. In the event the Government does not approve the Non-Federal Sponsor's second appraisal, or the Non-Federal Sponsor chooses not to obtain a second appraisal, the Government shall obtain an appraisal, and the fair market value shall be the amount set forth in the Government's appraisal, if such appraisal is approved by the Non-Federal Sponsor. In the event the Non-Federal Sponsor does not approve the Government's appraisal, the Government, after consultation with the Non-Federal Sponsor, shall consider the Government's and the Non-Federal Sponsor's appraisals and determine an amount based thereon, which shall be deemed to be the fair market value.

b. Where the amount paid or proposed to be paid by the Non-Federal Sponsor for the real property interest exceeds the amount determined pursuant to paragraph B.2.a. of this Article, the Government, at the request of the Non-Federal Sponsor, shall consider

all factors relevant to determining fair market value and, in its sole discretion, after consultation with the Non-Federal Sponsor, may approve in writing an amount greater than the amount determined pursuant to paragraph B.2.a. of this Article, but not to exceed the amount actually paid or proposed to be paid. If the Government approves such an amount, the fair market value shall be the lesser of the approved amount or the amount paid by the Non-Federal Sponsor, but no less than the amount determined pursuant to paragraph B.2.a. of this Article.

3. Eminent Domain Valuation Procedure. For lands, easements, or rights-of-way acquired by eminent domain proceedings instituted after the effective date of this Agreement, the Non-Federal Sponsor shall, prior to instituting such proceedings, submit to the Government notification in writing of its intent to institute such proceedings and an appraisal of the specific real property interests to be acquired in such proceedings. The Government shall have 60 days after receipt of such a notice and appraisal within which to review the appraisal, if not already approved by the Government in writing.

a. If the Government already has approved the appraisal in writing, or if the Government provides written approval of, or takes no action on, the appraisal within such 60-day period, the Non-Federal Sponsor shall use the amount set forth in such appraisal as the estimate of just compensation for the purpose of instituting the eminent domain proceeding.

b. If the Government provides written disapproval of the appraisal, including the reasons for disapproval, within such 60-day period, the Government and the Non-Federal Sponsor shall consult in good faith to promptly resolve the issues or areas of disagreement that are identified in the Government's written disapproval. If, after such good faith consultation, the Government and the Non-Federal Sponsor agree as to an appropriate amount, then the Non-Federal Sponsor shall use that amount as the estimate of just compensation for the purpose of instituting the eminent domain proceeding. If, after such good faith consultation, the Government and the Non-Federal Sponsor cannot agree as to an appropriate amount, then the Non-Federal Sponsor may use the amount set forth in its appraisal as the estimate of just compensation for the purpose of instituting the eminent domain proceeding.

c. For lands, easements, or rights-of-way acquired by eminent domain proceedings instituted in accordance with paragraph B.3. of this Article, fair market value shall be either the amount of the court award for the real property interests taken, to the extent the Government determined such interests are required for the construction, operation, and maintenance of the Project, or the amount of any stipulated settlement or portion thereof that the Government approves in writing.

4. Incidental Costs. For lands, easements, or rights-of-way acquired by the Non-Federal Sponsor within a five-year period preceding the effective date of this Agreement, or at any time after the effective date of this Agreement, the value of the interest shall include the documented incidental costs of acquiring the interest, as determined by the Government, subject to an audit in accordance with Article XI of this Agreement to determine reasonableness,

allowability, and allocability of costs. Such incidental costs shall include, but not necessarily be limited to, closing and title costs, appraisal costs, survey costs, attorney's fees, plat maps, and mapping costs, as well as the actual amounts expended for payment of any Public Law 91-646 relocation assistance benefits provided in accordance with Article III.E. of this Agreement.

5. Waiver of Appraisal. For lands, easements and rights-of-way acquired other than by eminent domain proceedings, an appraisal is not required if the Government determines that an appraisal is unnecessary because the valuation problem is uncomplicated and that the fair market value of the real property interests is estimated at \$2,500.00 or less based upon a review of available data, and if the Government and the Non-Federal Sponsor stipulate the value of the real property interests.

C. After consultation with the Non-Federal Sponsor, the Government shall determine the value of relocations in accordance with the provisions of this paragraph.

1. For a relocation other than a highway, the value shall be only that portion of relocation costs that the Government determines is necessary to provide a functionally equivalent facility, reduced by depreciation, as applicable, and by the salvage value of any removed items.

2. For a relocation of a highway, the value shall be only that portion of relocation costs that would be necessary to accomplish the relocation in accordance with the design standard that the Commonwealth of Kentucky would apply under similar conditions of geography and traffic load, reduced by the salvage value of any removed items.

3. Relocation costs shall include, but not necessarily be limited to, actual costs of performing the relocation; planning, engineering and design costs; supervision and administration costs; and documented incidental costs associated with performance of the relocation, but shall not include any costs due to betterments, as determined by the Government, nor any additional cost of using new material when suitable used material is available. Relocation costs shall be subject to an audit in accordance with Article XI of this Agreement to determine reasonableness, allowability, and allocability of costs.

D. The value of improvements made to lands, easements, and, rights-of-way for the disposal of dredged or excavated material shall be the costs of the improvements, as determined by the Government, subject to an audit in accordance with Article XI of this Agreement to determine reasonableness, allowability, and allocability of costs. Such costs shall include, but not necessarily be limited to, actual costs of providing the improvements; planning, engineering and design costs; supervision and administration costs; and documented incidental costs associated with providing the improvements, but shall not include any costs due to betterments, as determined by the Government.

ARTICLE V - PROJECT COORDINATION TEAM

A. To provide for consistent and effective communication, the Non-Federal Sponsor and the Government, not later than 30 days after the effective date of this Agreement, shall appoint named senior representatives to a Project Coordination Team. Thereafter, the Project Coordination Team shall meet regularly until the end of the period of construction. The Government's Project Manager and a counterpart named by the Non-Federal Sponsor shall co-chair the Project Coordination Team.

B. The Government's Project Manager and the Non-Federal Sponsor's counterpart shall keep the Project Coordination Team informed of the progress of construction and of significant pending issues and actions, and shall seek the views of the Project Coordination Team on matters that the Project Coordination Team generally oversees.

C. Until the end of the period of construction, the Project Coordination Team shall generally oversee the Project including issues related to design; plans and specifications; scheduling; real property and relocation requirements; real property acquisition; contract awards and modifications; contract costs; the Government's cost projections; final inspection of the construction or functional portions of the Project; preparation of the proposed Operation, Maintenance, Repair, Replacement, and Rehabilitation Manual; anticipated requirements and needed capabilities for performance of operation, maintenance, repair, rehabilitation, and replacement of the Project; and other related matters.

D. The Project Coordination Team may make recommendations that it deems warranted to the Non-Federal Sponsor on matters that the Project Coordination Team generally oversees, including suggestions to avoid potential sources of dispute. The Non-Federal Sponsor in good faith shall consider the recommendations of the Project Coordination Team. The Non-Federal Sponsor, having the legal authority and responsibility for construction of the Project, has the discretion to accept, reject, or modify the Project Coordination Team's recommendations. Except as otherwise provided in this Agreement, the Non-Federal Sponsor may not reject or modify the Project Coordination Team's recommendations when the purpose of such recommendations is to ensure that the Project complies with Federal, State, or local laws or regulations.

E. The costs of participation in the Project Coordination Team shall be included in total project costs, subject to Article VII of this Agreement, and cost shared in accordance with the provisions of this Agreement.

ARTICLE VI - METHOD OF PAYMENT

A. Based on the data supplied by the Non-Federal Sponsor the Government shall maintain current records of cumulative project costs and current projections of total project

costs. By July 1999 and at least quarterly thereafter, the Government shall provide the Non-Federal Sponsor with a report setting forth cumulative project costs, cumulative project costs incurred by or on behalf of each party, each party's share of cumulative project costs, cumulative reimbursements made in accordance with paragraph B.2. of this Article, and current projections of total project costs, of total project costs incurred by or on behalf of each party, of each party's share of total project costs, of total reimbursements, and of reimbursements in the upcoming fiscal year. On the effective date of this Agreement, total project costs are projected to be \$ 379,668.10, total project costs incurred by the Government are projected to be \$ 25,000, total project costs incurred by the Non-Federal Sponsor are projected to be \$ 354,668.1, the Government's share of total project costs is projected to be \$ 284,751.07, the Non-Federal Sponsor's share of total project costs is projected to be \$ 94917.03, and total reimbursements in accordance with paragraph B.2. of this Article are projected to be \$ 10,000. Such amounts are estimates subject to adjustment by the Government and are not to be construed as the total financial responsibilities of the Government and the Non-Federal Sponsor.

B. In accordance with the provisions of this paragraph, the Government shall contribute its share of total project costs required under Article II.B.2. of this Agreement as it incurs such costs or as such costs incurred by or on behalf of the Non-Federal Sponsor are determined.

1. Periodically, but not more frequently than once every thirty days, the Non-Federal Sponsor shall provide the Government with a proper invoice for costs, other than the values determined in accordance with Article IV of this Agreement, that it has incurred and that are not included in a previous proper invoice. Each proper invoice shall identify those costs that were incurred with Federal funds and those costs that were incurred without Federal funds and shall provide such evidence of payments or obligation to contractors and of costs incurred by the Non-Federal Sponsor's own forces as may be required by the Government.

2. Not later than 14 days after receipt of each proper invoice, the Government, in accordance with this paragraph, shall review the costs identified therein and, subject to the limitations in Article VII of this Agreement, shall include such costs, in whole or in part, in total project costs. Thereupon, the Government shall estimate cumulative project costs (including the value of lands, easements, rights-of-way, relocations, and suitable borrow and dredged or excavated material disposal areas for which the Government affords credit in accordance with Article IV of this Agreement), cumulative project costs incurred by or on behalf of each party, each party's share of cumulative project costs, and cumulative reimbursements previously made in accordance with this paragraph. To the extent that the Government estimates that cumulative project costs that it has incurred plus cumulative reimbursements it previously has made in accordance with this paragraph are less than its required share of cumulative project costs, the Government, subject to Article II.B.5. of this Agreement, shall partially reimburse those project costs that were incurred by or on behalf of the Non-Federal Sponsor without using Federal funds (including project costs incurred using grants from State or local agencies) and that were not previously reimbursed by the Government.

3. Upon determining under paragraph B.2. of this Article that reimbursement is due the Non-Federal Sponsor, the Government shall make such payment within 7 days subject to Article II.B.5. of this Agreement. An interest penalty shall be credited to the Non-Federal Sponsor's account automatically by the designated payment office, without request from the Non-Federal Sponsor, if payment is not made by the due date. The interest penalty shall be at the rate established by the Secretary of the Treasury under Section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date, except where the interest penalty is prescribed by other governmental authority. This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the invoice payment amount approved by the Government and shall be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period shall be added to the approved invoice payment amount and be subject to interest penalties if not paid in the succeeding 30-day period.

C. In advance of the Government incurring any financial obligation associated with additional work under Article II.A.4. of this Agreement, the Government shall notify the Non-Federal Sponsor in writing of the additional funds required. Within 30 calendar days thereafter, the Non-Federal Sponsor shall provide the Government with the full amount of the funds required to pay for such additional work by delivering a check payable "FAO, USAED, Louisville District" to the District Engineer or an Electronic Funds Transfer in accordance with procedures established by the Government.

D. Upon completion of the project or termination of this Agreement, and upon resolution of all relevant claims and appeals, the Government shall conduct a final accounting and furnish the Non-Federal Sponsor with the results of the final accounting. The final accounting shall determine total project costs, the Government's total contribution provided thereto (including reimbursements), and the Government's required share thereof.

1. In the event the final accounting shows that the total contribution provided by the Government is less than its required share of total project costs, the Government shall, subject to Article II.B.5. of this Agreement, no later than 90 calendar days after completion of final accounting, make a cash payment to the Non-Federal Sponsor of whatever sum is required to meet the Government's required share of total project costs.

2. In the event the final accounting shows that the total contribution provided by the Government exceeds its required share of total project costs, the Non-Federal Sponsor shall refund the excess to the Government no later than 90 calendar days after written notice by the Government that the final accounting is complete. In the event existing funds are not available to refund the excess to the Government, the Non-Federal Sponsor shall seek such funds as are necessary to make the refund. In the event that such funds are not made available within a reasonable amount of time, the Government may apply any amounts owed toward the Federal share of costs under any subsequent agreement with the Non-Federal Sponsor for any other project or separable element under the Section 531 program and may use any other procedures

permitted by law. The Non-Federal Sponsor shall be liable for interest under Article XV.C. of this Agreement to the extent that such refund takes longer than ninety [90] calendar days after the final accounting is complete.

ARTICLE VII - LIMITATIONS ON PROJECT COSTS

A. Costs incurred by or on behalf of the Non-Federal Sponsor using Federal funds shall not be included in total project costs and not cost shared in accordance with the provisions of this Agreement unless the Federal granting agency verifies in writing that such inclusion is expressly authorized by statute.

B. The Non-Federal Sponsor may receive credit towards its share of the total project costs for the reasonable costs of project design work which was completed by the Non-Federal Sponsor prior to entering into a Project Cooperation Agreement with the Government. Such credit shall be limited to the reasonable, allowable, allocable actual cost or value of project design work as determined by the District Engineer. Where the Non-Federal Sponsor's cost for completed project design work is expressed as fixed costs plus a percentage of construction costs, the Non-Federal Sponsor shall renegotiate such costs with its Architect-Engineer based on actual costs. On the effective date of this Agreement, the amount of credit for project design work completed prior to this Agreement to be afforded against the Non-Federal Sponsor's required contribution towards total project costs in accordance with Article VI.B. of this Agreement is projected to be \$ 0.00. This amount is an estimate subject to adjustment by the Government in its sole discretion and is not to be construed as the financial obligation of the Government or the Non-Federal Sponsor. The Non-Federal Sponsor in a timely manner shall provide the Government with such documents as are sufficient to enable the Government to determine the amount of credit to be afforded for this project design work

C. All project costs shall be subject to audit in accordance with Article XI of this Agreement to determine the reasonableness, allowability and allocability of such costs.

D. Except as provided in Article VI.B. of this Agreement, project costs incurred by the Non-Federal Sponsor shall not be subject to interest charges and shall not be adjusted to reflect changes in price levels since the time that the costs were incurred.

ARTICLE VIII - DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this Agreement, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. The parties shall each pay 50 percent of any costs for the services provided by such a third party as such costs are

incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this Agreement.

ARTICLE IX - OPERATION, MAINTENANCE, REPAIR, REHABILITATION AND REPLACEMENT (OMRR&R)

Upon completion of construction and final inspection by the Government as provided for by Article II.B.1. of this Agreement, the Non-Federal Sponsor shall operate, maintain, repair, rehabilitate, and replace the entire Project or the functional portion of the Project, at no cost to the Government, in a manner compatible with the Project's design and its Operation, Maintenance, Repair, Rehabilitation and Replacement Manual, and in accordance with applicable Federal and State laws as provided in Article XII of this Agreement. As between the Government and the Non-Federal Sponsor, the Government shall have no responsibility to operate, maintain, repair, rehabilitate, or replace the Project or functional portion of the Project.

ARTICLE X - INDEMNIFICATION

The Non-Federal Sponsor shall hold and save the Government free from all damages arising from the design, construction, operation, maintenance, repair, rehabilitation and replacement of the Project, and any Project-related betterments, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE XI - MAINTENANCE OF RECORDS AND AUDIT

A. Not later than 60 calendar days after the effective date of this Agreement, the Government and the Non-Federal Sponsor shall develop procedures for keeping books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement. These procedures shall incorporate, and apply as appropriate, the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 C.F.R. Section 33.20. The Government and the Non-Federal Sponsor shall maintain such books, records, documents, and other evidence pertaining to construction in accordance with these procedures and for a minimum of three years after the period of construction and resolution of all relevant claims arising therefrom. To the extent permitted under applicable Federal laws and regulations, the Government and the Non-Federal Sponsor shall each allow the other to inspect such books, documents, records, and other evidence.

B. Pursuant to 32 C.F.R. Section 33.26, the Non-Federal Sponsor is responsible for complying with the Single Audit Act of 1984, 31 U.S.C. Sections 7501-7507, as implemented by Office of Management and Budget (OMB) Circular No. A-133 and Department of Defense Directive 7600.10. Upon request of the Non-Federal Sponsor and to the extent permitted under

applicable Federal laws and regulations, the Government shall provide to the Non-Federal Sponsor and independent auditors any information necessary to enable an audit of the Non-Federal Sponsor's activities under this Agreement. The costs of any non-Federal audits performed in accordance with this paragraph shall be allocated in accordance with the provisions of OMB Circulars A-87 and A-133, and such costs as are allocated to the Project shall be included in the total project costs and cost shared in accordance with the provisions of this Agreement.

C. In accordance with 31 U.S.C. Section 7503, the Government may conduct audits in addition to any audit that the Non-Federal Sponsor is required to conduct under the Single Audit Act. Any such Government audits shall be conducted in accordance with Government Auditing Standards and the cost principles in OMB Circular No. A-87 and other applicable cost principles and regulations. The costs of Government audits performed in accordance with this paragraph shall be included in the total projects costs and cost shared in accordance with the provisions of this Agreement.

ARTICLE XII - FEDERAL AND STATE LAWS

In the exercise of their respective rights and obligations under this Agreement, the Non-Federal Sponsor and the Government agree to comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulations 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army".

ARTICLE XIII - RELATIONSHIP OF PARTIES

A. In the exercise of their respective rights and obligations under this Agreement, the Government and the Non-Federal Sponsor each act in an independent capacity, and neither is to be considered the officer, agent, or employee of the other.

B. In the exercise of its rights and obligations under this Agreement, neither party shall provide, without the consent of the other party, any contractor with a release that waives or purports to waive any rights such other party may have to seek relief or redress against such contractor either pursuant to any cause of action that such other party may have or for violation of any law.

ARTICLE XIV - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, nor any resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

ARTICLE XV - TERMINATION OR SUSPENSION

A. If at any time the Non-Federal Sponsor fails to fulfill its obligations under Article II.A. of this Agreement, the Assistant Secretary of the Army (Civil Works) may terminate this Agreement or suspend future performance under this Agreement unless he determines that continuation of work on the Project is in the interest of the United States or is necessary in order to satisfy agreements with any other non-Federal interests in connection with the Project.

B. In the event that either party elects to terminate this Agreement pursuant to this Article or Article XVI of this Agreement, both parties shall conclude their activities relating to the Project and proceed to a final accounting in accordance with Article VI.D. of this Agreement.

C. Any termination of this Agreement or suspension of future performance under this Agreement in accordance with this Article or Article XVI of this Agreement shall not relieve the parties of liability for any obligation previously incurred. Any delinquent payment owed by the Non-Federal Sponsor shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 per centum of the average bond equivalent rate of the 13-week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning of each additional 3-month period if the period of delinquency exceeds 3 months.

ARTICLE XVI - HAZARDOUS SUBSTANCES

A. After execution of this Agreement and upon direction by the Government, the Non-Federal Sponsor shall perform, or cause to be performed, any investigations for hazardous substances that the Government or the Non-Federal Sponsor determines to be necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (hereinafter "CERCLA"), 42 U.S.C. Sections 9601-9675, that may exist in, on, or under lands, easements, and rights-of-way that the Non-Federal Sponsor and the Government determine, pursuant to Article III of this Agreement, to be required for the construction, operation, maintenance, repair, rehabilitation, and replacement of the Project. However, for lands that the Government determines to be subject to the navigation servitude, only the Government shall perform such investigations unless the Government provides the Non-Federal Sponsor with prior specific written direction, in which case the Non-Federal Sponsor shall perform such investigations in accordance with such written direction. All actual costs incurred by the Non-Federal Sponsor for such investigations for hazardous substances shall be included in the total project costs and cost shared in accordance with the provisions of this Agreement, subject to an audit in

accordance with Article XI of this Agreement to determine reasonableness, allowability, and allocability of costs.

B. In the event it is discovered through any investigation for hazardous substances or other means that hazardous substances regulated under CERCLA exist in, on, or under any lands, easements, or rights-of-way that the Non-Federal Sponsor and the Government determine, pursuant to Article III of this Agreement, to be required for the construction, operation, and maintenance of the Project, the Non-Federal Sponsor and the Government shall provide prompt written notice to each other, and the Non-Federal Sponsor shall not proceed with the acquisition of the real property interests until both parties agree that the Non-Federal Sponsor should proceed.

C. The Government and the Non-Federal Sponsor shall determine whether to initiate construction of the Project, or, if already in construction, whether to continue with work on the Project, suspend future performance under this Agreement, or terminate this Agreement for the convenience of the Government, in any case where hazardous substances regulated under CERCLA are found to exist in, on, or under any lands, easements, or rights-of-way that the Non-Federal Sponsor and the Government determine, pursuant to Article III of this Agreement, to be required for the construction, operation, maintenance, repair, rehabilitation, and replacement of the Project. Should the Government and the Non-Federal Sponsor determine to initiate construction or continue with construction after considering any liability that may arise under CERCLA, the Non-Federal Sponsor shall be responsible, as between the Government and the Non-Federal Sponsor, for the costs of clean-up and response, to include the costs of any studies and investigations necessary to determine an appropriate response to the contamination. Such costs shall not be considered a part of the total project costs. In the event the Non-Federal Sponsor fails to provide any funds necessary to pay for clean up and response costs or to otherwise discharge the Non-Federal Sponsor's responsibilities under this paragraph upon direction by the Government, the Government may, in its sole discretion, either terminate this Agreement for the convenience of the Government, suspend future performance under this Agreement, or continue work on the Project.

D. The Non-Federal Sponsor and the Government shall consult with each other in accordance with Article V of this Agreement in an effort to ensure that responsible parties bear any necessary clean up and response costs as defined in CERCLA. Any decision made pursuant to paragraph C. of this Article shall not relieve any third party from any liability that may arise under CERCLA.

E. As between the Government and the Non-Federal Sponsor, the Non-Federal Sponsor shall be considered the operator of the Project for purposes of CERCLA liability. To the maximum extent practicable, the Non-Federal Sponsor shall operate, maintain, repair, replace, and rehabilitate the Project in a manner that will not cause liability to arise under CERCLA.

ARTICLE XVII - NOTICES

A. Any notice, request, demand, or other communication required or permitted to be given under this Agreement shall be deemed to have been duly given if in writing and either delivered personally or by telegram or mailed by first-class, registered, or certified mail, as follows:

If to the Non-Federal Sponsor:

Beaver Elkhorn Water District
96 Kentucky Route 3188
Martin, Kentucky 41649

If to the Government:

District Engineer
Louisville District
Corps of Engineers
600 Dr. Martin Luther King, Jr. Place
Louisville, KY 40202-2230

B. A party may change the address to which such communications are to be directed by giving written notice to the other party in the manner provided in this Article.

C. Any notice, request, demand, or other communication made pursuant to this Article shall be deemed to have been received by the addressee at the earlier of such time as it is actually received or seven calendar days after it is mailed.

ARTICLE XVIII - CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

ARTICLE XIX - HISTORIC PRESERVATION

A. The Government shall be responsible for compliance with Section 106 of the National Historic Preservation Act (16 U.S.C. 470 et seq.) for all lands required for the Undertaking, as defined by Section 301 of the Act. Prior to initiation of construction, the Non-Federal Sponsor shall perform all necessary cultural resource studies, and the Government shall make all determinations and consultation in a manner consistent with 36 Code of Federal

Regulations (CFR) Part 800, "Protection of Historic Properties," the Secretary of the Interior's Standards and Guidelines for Identification (48 Federal Register 44720-23), the National Park Service's publications, The Archaeological Survey: Methods and Uses (1978) and Identification of Historic Properties (1988), and the applicable guidelines of the State Historic Preservation Officer (SHPO). The Government shall ensure that the Non-Federal Sponsor's studies are conducted by qualified archaeologists, historians, architectural historians and/or historic architects, as appropriate, who meet, at minimum, the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register 44738-39). The Non-Federal Sponsor shall submit study plans and reports to the Government for review and approval and shall be responsible for resolving any deficiencies. In the event that significant archeological or historical properties will be adversely affected, the Non-Federal Sponsor shall formulate a mitigation plan in consultation with the Government. The Non-Federal Sponsor shall be responsible for implementing the mitigation contained in a signed Memorandum of Agreement prior to the initiation of any construction activities affecting historic properties.

B. The Non-Federal Sponsor's responsibilities under this Article are limited to those historic properties within the Undertaking's area of potential effect, as defined by 36 CFR Part 800.2(c). Any betterments not affecting historic properties and constructed by the Non-Federal Sponsor without Federal funds are not considered to be subject to the provisions of this Article.

C. The Non-Federal Sponsor shall include provisions in all construction contracts for the protection of cultural resources discovered during construction. These provisions shall include, at a minimum, the cessation of work in the immediate area of a discovered cultural resource until the situation is properly evaluated, the immediate verbal and written notification of the Non-Federal Sponsor and Government, and consultation between the Non-Federal Sponsor, the Government and the SHPO on appropriate measures to evaluate and treat the resource. Where the Non-Federal Sponsor elects to perform the construction work with its own forces, the same procedures shall be followed.

D. The costs of identification, survey and evaluation of historic properties shall be included in the total project costs, subject to Article VII of this Agreement, and cost shared in accordance with the provisions of this Agreement.

E. As specified in Section 7(a) of Public Law 93-291 (16 U.S.C. 469c(a)), the costs of mitigation and data recovery activities associated with historic preservation shall be borne entirely by the Government and shall not be included in the total project costs up to the statutory limit of one percent of the total amount the Government is authorized to expend for the Project.

F. The Government shall not incur costs for mitigation and data recovery that exceed the statutory one percent limit specified in paragraph E. of this Article unless and until the Assistant Secretary of the Army (Civil Works) has waived that limit in accordance with Section 208(3) of Public Law 96-515 (16 U.S.C. 469c-2(3)). Any costs of mitigation and data recovery that exceed the one percent limit shall be included in the total project costs.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, which shall become effective upon the date it is signed by the Assistant Secretary of the Army (Civil Works).

THE DEPARTMENT OF THE ARMY
DISTICTCOUNTY FISCAL COURT

BEAVER ELKHORN WATER

BY: _____
Joseph W. Westphal
Assistant Secretary of the Army
(Civil Works)

BY: _____
XXXXXXXXXX
Beaver Elkhorn Water Distict

DATE: _____

DATE: _____

CERTIFICATE OF AUTHORITY

I, _____, do hereby certify that XXXXXX is the Chairman of the Beaver Elkhorn Board of Directors, that Beaver Elkhorn Water District is a legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the Department of the Army and the County in connection with the Bill Hall Branch Water Line Extension Project, and to pay damages in accordance with the terms of this Agreement, if necessary, in the event of the failure to perform, and that the persons who have executed this Agreement on behalf of the Beaver Elkhorn Water District have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this
_____ day of _____ 19__.

ATTACHMENT 'C'
SPONSOR LETTER OF INTEREST

May 12, 1999

Eastern Kentucky PRIDE Office
2292 South Highway 27
Somerset, KY 42501

RE: Letter of Interest
Elkhorn PRIDE Application

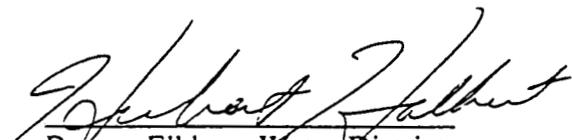
Gentlemen:

This correspondence is prepared in response to a coordination meeting with the U.S. Army Corps of Engineers (Louisville District). The Beaver Elkhorn Water District is aggressively pursuing the "Bill Hall Branch Water Line Extension Project." Summit Engineering, Inc. has prepared the plans and specifications for the project and applications for project construction permits have been submitted.

The Beaver Elkhorn Water District has reviewed a "typical" PRIDE PCA agreement. We understand that PRIDE funds are provided on a 75/25 community match basis. The line extension project is organized as three contracts (line, pump, and telemetry). The Water District intends to provide its match by utilizing its own forces to install the line contract.

Please consider this correspondence as the Beaver Elkhorn Water District's intent to enter into an Assistance Agreement with the Corps of Engineers and proceed with the Project.

Sincerely,


Beaver Elkhorn Water District

FLOYD COUNTY
BILL HALL BRANCH WATER LINE EXTENSION

FINANCING PLAN, FINANCIAL CAPABILITY ANALYSIS
AND DISTRICT ASSESSMENT

MAY 12, 1999



Kevin M. Howard
5-28-99

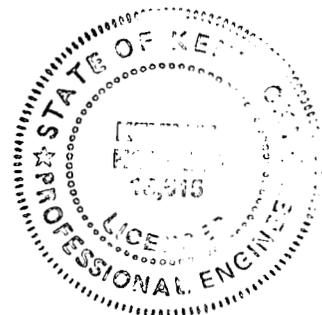


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APPENDIX

**FLOYD COUNTY
BILL HALL BRANCH WATER LINE EXTENSION
FINANCING PLAN, FINANCIAL CAPABILITY ANALYSIS
AND DISTRICT ASSESSMENT**

SECTION 1. PROJECT OVERVIEW

1.01 Introduction

The purpose of this report is to determine whether the Sponsor presents a viable plan for meeting the financial responsibilities for the Floyd county Bill Hall Branch Water Line Extension Project. The Sponsor proposes to construct the line extensions for the Project to cover the non-federal share of the project costs. This report includes the following sections:

- An overview of the project that includes the main purpose of the project and the principal parties involved with the project.
- A summary of the cost-sharing requirements as per the PRIDE Section 531 Program, responsibilities of the sponsor, and evidence of the sponsor's capability to fulfill all cost-sharing aspects of the project.
- The District's Assessment of the Sponsor's financial capability.

1.02 The Project

The Floyd County Bill Hall Branch Water Line Extension Project was selected for funding in the PRIDE Section 531 Program during February 1998 under a competitive selection process. The Bill Hall Branch Water Line Extension will extend potable water service to approximately 42 residents in Bill Hall Branch near McDowell, Kentucky (Floyd County). The work is organized as follows:

1. Contract No. 1 – 11,940 LF of 4" water line, 1 – 20,000 gallon skid tank, & 42 water meter sets with related appurtenances.
2. Contract No. 2 – 1 water booster pumping station (50 GPM).
3. Contract No. 3 – Supervisory control and data acquisition system for 1 pump station and 1 water storage tank.

The project is undertaken to replace resident's ground water supplies that have been degraded by prior industrial activity. Project financing includes a PRIDE grant and local matching funds. The water utility intends to construct Contract 1 force account to satisfy PRIDE grant match requirements.

Summit Engineering, Inc designed the Bill Hall Branch Water Line Extension Project. The Kentucky Division of Water has received and is reviewing the design and specifications for all construction.

1.03 Cost-Sharing

Analysis shows that the Sponsor qualifies for cost sharing at the 75/25 percent rate for the PRIDE Section 531 Program. Under this program, the Sponsor receives credit towards its 25% share for construction costs, administration and legal, right of way agent (which includes easement collection), engineering design and inspection, miscellaneous costs and studies. The Sponsor will construct Contract No. 1 of the Project with the Sponsor's personnel and equipment. As indicated in Attachment 'A' the Sponsor anticipates that this 'in kind' construction will exceed the twenty five (25) percent match. The Sponsor anticipates PRIDE reimbursing costs in excess of the project match requirement.

1.04 Expenditures and Use of Funds

Attachment 'A' shows the Sponsor's cost-share amount for the Floyd County Bill Hall Water Line Extension Project as well as the total PRIDE Project costs by category. Attachment 'B' documents the project costs used in Attachment 'A'.

SECTION 2. COST-SHARE PROJECT RESPONSIBILITIES

2.01 The Sponsor's Financing Plan

The Sponsor has signed a Letter of Intent expressing support for the Bill Hall Branch Water Line Extension Project (See Attachment 'C'). The sponsor intends to construct Contract No. 1 of the Project to provide the Sponsor's 25% non-federal share of the project.

The Sponsor also understands that it is responsible for Operation, Maintenance, Repair, Rehabilitation and Replacement (OMRR&R) costs upon completion of the Project's construction phase. The sponsor accepts responsibility for OMRR&R costs. OMRR&R costs will be nominal for this project. Power consumption will be around \$350 a year. The telemetry system will preclude the need for manpower to make daily checks of pump operation and tank levels. Pumps wear out and tanks require repainting. A nominal amount of \$1,000.00 per year should be escrowed to cover these costs. Funding for these costs will be recovered from the user and tap fees for the new project customers.

2.02 The Sponsor's Financial Capability

The funding for the non-federal share of the Section 531 PRIDE project will involve personnel and equipment currently in the employ of the Beaver Elkhorn Water District.

As noted, the Letter of Intent is primary and direct evidence of the Sponsor's intent to participate in the project. Furthermore, the Sponsor has coordinated the preparation of the necessary project plans and specifications to accomplish the work.

SECTION 3. DISTRICT ASSESSMENT

3.01 Introduction

The Louisville District must determine whether the Sponsor's financial capability enables it to satisfy the responsibilities associated with the implementation of the Project as stated in the PCA. This section focuses on the Sponsor's past performance on similar endeavors, certainty of revenue sources, and the general financial state of the Sponsor.

3.02 Assessment of the Sponsor's Performance on Prior Projects

One method used in assessing a non-federal Sponsor's ability and willingness to pay involves examining its past record with efforts similar in scope to the Project. The Beaver Elkhorn Water District successfully expanded their water treatment plant in 1993 with a State Revolving Loan in excess of \$1,000,000 (Beaver Elkhorn Water Treatment Plant Improvement Project). Loan repayments are current. This example of a public agency's willingness to finance a project for the Water District and the Water District's ability to carry out the work and meet repayment schedules is sufficient to assess past performance on prior projects.

3.03 Overall Financial Position

The overall financial position of the Water District appears solid. Audited financial reports show the total revenues for the utility are consistent with the number of customers served. The audited financial reports show the Sponsor can effectively and responsibly manage funds. The Sponsor accepts responsibility for OMRR&R costs. An estimated amount of \$1000.00 per year will be escrowed to cover these costs.

3.04 District's Recommendation

Given the continuing interest and support of the Beaver Elkhorn Water District, its proven record on previous projects, and its sound financial state, approval of the Sponsors Financing Plan is recommended.

APPENDIX

- Attachment 'A' – Analysis of Funding Sources
- Attachment 'B' – Preliminary Opinion of Probable Project Cost
- Attachment 'C' – Letter of Intent
- Attachment 'D' – Beaver Elkhorn Water District Budget 1999 (Draft)
- Attachment 'E' – PSC Audit for Beaver Elkhorn Water District 1998-1997
- Attachment 'F' – PSC Audit for Beaver Elkhorn Water District 1997-1996

ATTACHMENT 'A'
ANALYSIS OF FUNDING SOURCES
BILL HALL BRANCH WATER LINE EXTENSION (Note 1)

ITEM	COST CLASSIFICATION	FUND SOURCES			TOTAL
		MATCHING FUNDS		PRIDE FUNDS	
		LOCAL IN KIND	LOCAL REAL \$		
1	Administrative & Legal	\$0.00	(Note 2) \$0.00	\$0.00	\$0.00
2	Donated Right of Way for Tank and Pump Station Sites (Note 1)	\$15,000.00			\$15,000.00
3	Engineering			\$13,000.00	\$13,000.00
	a. Design			\$2,000.00	\$2,000.00
	b. Bidding			\$23,890.35	\$23,890.35
	c. Const Admin & Inspection				
4	Construction			\$118,537.97	\$198,455.00
	a. Contract 1 (Note 1)	\$79,917.03		\$63,000.00	\$63,000.00
	b. Contract 2			\$25,000.00	\$25,000.00
	c. Contract 3				
5	Miscellaneous				\$0.00
	a. Const. Period Interest, Planning Studies, etc.	\$0.00			
6	Contingencies			\$14,322.75	\$14,322.75
7	PRIDE project administration costs			\$25,000.00	\$25,000.00
8	TOTAL	\$94,917.03	\$0.00	\$284,751.07	\$379,668.10
	PERCENT MATCH	25.0%	0.0%	75%	
	TOTAL MATCH		25.0%	75%	

NOTES

1. Utility plans to construct Contract No. 1 with its personnel. Utility will request reimbursement of costs in excess of amount required to match the PRIDE project.
2. This column provided for future reference. Some match projects require a local "out of pocket" expenditure in addition to "in kind" match.

ATTACHMENT 'B'
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST
HALL BRANCH WATER LINE
FLOYD COUNTY, KENTUCKY (NOTE 1)
 7-May-99

ITEM	ITEM	Total	UNIT	UNIT PRICE	TOTAL AMOUNT
NO.		Project		MATERIAL	INC. PROFIT
CONTRACT NO. 1 - LINE EXTENSION & SKID TANK - FORCE ACCOUNT					
1	GENERAL				
1a	Mobilization/DeMobilization (See Note 2)	1	LS	\$2,000.00	\$ 2,000.00
1b	Seeding	1	LS	\$3,000.00	\$ 3,000.00
1c	Special Pipe Bedding (See Note 3)	100	TON	\$20.00	\$ 2,000.00
2	CONNECTIONS				
2a	Connect to Existing 6" Water Line	1	EA	\$1,000.00	\$ 1,000.00
3	WATER LINE				
3a	4" D.I. Water Line, CL 350, PJ (See Note 4)	90	LF	\$14.00	\$ 1,260.00
3b	4" PVC Water Line, SDR 17 (See Note 4)	11,940	LF	\$8.00	\$ 95,520.00
4	VALVES				
4a	4" Resilient Wedge Gate Valve, MJ, 250 psi	11	EA	\$375.00	\$ 4,125.00
4b	Air Relief	1	EA	\$600.00	\$ 600.00
5	FITTINGS				
5a	4"x4"x4" Compact DI Tee, MJ	5	EA	\$100.00	\$ 500.00
5b	4"x4"x3" Compact DI Tee, MJ	4	EA	\$100.00	\$ 400.00
5c	6"x4" Reducer	1	EA	\$200.00	\$ 200.00
6	ENCASEMENTS				
6a	Bore and Encase for 4" Water Line	146	LF	\$100.00	\$ 14,600.00
6b	Open Cut - Encase for 4" Water Line	18	LF	\$50.00	\$ 900.00
7	SERVICE CONNECTIONS				
7a	5/8" x 3/4" Water Meter Set with PRV	42	EA	\$400.00	\$ 16,800.00
7b	5/8" x 3/4" Water Meter Set without PRV	0	EA	\$350.00	\$ -
7c	3/4" Copper Service Line - Type K	0	LF	\$7.00	\$ -
7d	3/4" HDPE Service Line (SDR 9.3)	1,340	LF	\$5.50	\$ 7,370.00
8	HYDRANTS				
8a	Blow-Off with Valve	4	EA	\$1,300.00	\$ 5,200.00
9	SURFACE REPLACEMENT (FOR MAIN LINE ONLY)				
9a	Bituminous Pavement Replacement w/o Concrete Sub Slab	40	LF	\$12.00	\$ 480.00
9b	Concrete Pavement Replacement	0	LF	\$20.00	\$ -
10	PUMPS, STORAGE, AND PRV's				
10d	20,000 Gal. Skid Tank	1	LS	\$30,000.00	\$ 30,000.00
10e	Skid Tank Site Prep (Power, Vault, Access)	1	LS	\$12,500.00	\$ 12,500.00
CONTRACT NO. 2 - WATER BOOSTER PUMPING STATION					
1	GENERAL				
1a	Mobilization/DeMobilization (See Note 2)	1	LS	\$3,000.00	\$ 3,000.00
10a	50 GPM Water Booster Pumping Station	1	LS	\$60,000.00	\$ 60,000.00
CONTRACT NO. 3 - TELEMETRY					
1	GENERAL				
1a	Mobilization/DeMobilization (See Note 2)	1	LS	\$3,000.00	\$ 3,000.00
10f	RTU Water Booster Pumping Station	1	LS	\$11,000.00	\$ 11,000.00
10g	RTU Water Storage Tank	1	LS	\$11,000.00	\$ 11,000.00
SUB-TOTAL CONSTRUCTION					\$ 286,455.00
Design					\$ 13,000.00
Bidding					\$ 2,000.00
Construction Admin & Resident Inspection @ 8.34%					\$ 23,890.35
Right of Way					\$ 15,000.00
Corps PRIDE Grant Admin					\$ 25,000.00
Contingency @ 5%					\$ 14,322.75
PROBABLE PROJECT COST					\$ 379,668.10
NOTES					
1. This is a preliminary project cost estimate for purposes of budgeting and alternate comparison only.					

ATTACHMENT 'C'
SPONSOR LETTER OF INTEREST

May 12, 1999

Eastern Kentucky PRIDE Office
2292 South Highway 27
Somerset, KY 42501

RE: Letter of Interest
Elkhorn PRIDE Application

Gentlemen:

This correspondence is prepared in response to a coordination meeting with the U.S. Army Corps of Engineers (Louisville District). The Beaver Elkhorn Water District is aggressively pursuing the "Bill Hall Branch Water Line Extension Project." Summit Engineering, Inc. has prepared the plans and specifications for the project and applications for project construction permits have been submitted.

The Beaver Elkhorn Water District has reviewed a "typical" PRIDE PCA agreement. We understand that PRIDE funds are provided on a 75/25 community match basis. The line extension project is organized as three contracts (line, pump, and telemetry). The Water District intends to provide its match by utilizing its own forces to install the line contract.

Please consider this correspondence as the Beaver Elkhorn Water District's intent to enter into an Assistance Agreement with the Corps of Engineers and proceed with the Project.

Sincerely,


Beaver Elkhorn Water District

BEAVER-ELKHORN WATER DISTRICT

Budget
1999**DRAFT**

Operating revenue	
Water sales	\$ 910,000
Penalties and service charges	22,900
Other	<u>1,800</u>
Total operating revenue	<u>934,700</u>
Operating expenses	
Pumping expenses	
Labor	54,500
Utilities for pumping	25,000
Supplies and expenses (see detail)	18,600
Water treatment expense	
Chemicals	27,200
Water analysis	4,600
Supplies and expenses	100
Transportation and distribution expenses	
Labor	144,600
Labor - Bill Hall Br. (in-kind match)	80,000
Supplies and expenses (see detail)	56,750
Customer account expenses	
Supplies and expense (see detail)	6,000
Uncollected accounts	1,200
General and administrative expenses	
Salaries	48,500
Supplies and other expenses (see detail)	18,550
Outside services employed (see detail)	29,500
Insurance (see detail)	9,000
Employee benefits (see detail)	64,200
Miscellaneous and commissioners expenses (see detail)	11,900
Transportation expenses	100
Payroll and other taxes (see detail)	26,200
Depreciation	<u>185,700</u>
Total operating expenses	<u>812,200</u>
Net operating income	122,500
Non operating income (expense)	
Interest income	7,100
Interest expense	<u>119,250</u>
Net income (loss)	<u>10,350</u>

BEAVER-ELKHORN WATER DISTRICT
Budget (continued)
1999

DRAFT

Net income (loss)		<u>\$ 10,350</u>
Add:		
Depreciation and amortization		185,700
Tap-on-fees collected		12,500
Donated Rt. of Way Bill Hall Br.		<u>15,000</u>
		<u>213,200</u>
Less:		
Transfer to repair & maintenance fund	21,600	
Transfer to bond reserve fund	2,850	
General utility plant additions	5,000	
Bill Hall Br. R/O/W (in-kind match)	15,000	
Note payments	<u>93,500</u>	
		<u>137,950</u>
Anticipated cash available		<u>\$ 85,600</u>

BEVER-ELKHORN WATER DISTRICT

Budget
Detail
1999**DRAFT**

Pumping expense	
Supplies and expenses	\$ 3,800
Telephone and utilities	4,900
Gasoline	500
Vehicle repairs	400
Contract labor	100
Postage	100
Repairs	<u>8,800</u>
Total	<u>18,600</u>
Transmission and distribution expenses	
Supplies and expenses	12,800
Uniform rental	7,300
Gasoline	9,300
Vehicle repairs	3,000
Contract labor	750
Utilities	22,800
Equipment rental	<u>800</u>
Total	<u>56,750</u>
Customer account expense	
Supplies and expenses	700
Billing postage	<u>5,300</u>
Total	<u>6,000</u>
General and administrative expense	
Supplies and other expenses	
Rent	7,700
Postage	700
Supplies	3,550
Telephone and utilities	<u>6,600</u>
Total	<u>18,550</u>
Outside services employed	
Legal	2,000
Accounting	<u>27,500</u>
Total	<u>29,500</u>

BEAVER-ELKHORN WATER DISTRICT

Budget

Detail (continued)

1999

DRAFT

General and administrative expenses (continued)

Insurance	
Property and vehicle insurance	\$ 8,500
Commissioners bond	<u>500</u>
Total	<u>9,000</u>
Employee benefits	
Employee insurance	52,500
Workmens compensation	<u>11,700</u>
Total	<u>64,200</u>
Miscellaneous and commissioners expense	
Commissioners fee	3,500
Railroad rent	600
Miscellaneous	<u>7,800</u>
Total	<u>11,900</u>
Payroll and other taxes	
Payroll taxes	24,500
PSC assessment	<u>1,700</u>
Total	<u>26,200</u>

JAMES E. BICKFORD
SECRETARY



PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

May 10, 1999

Beaver Elkhorn Water District
Junction of Route 80 & 122
Martin, Kentucky 41649

RE: DW #0360026-99-001
Water Line Extension,
Skid Tank, & Pump Station
Bill Hill Branch, 1, 2, & 3
Floyd County, Kentucky

Dear Sirs:

This is to advise that plans and specifications covering the above referenced subject are APPROVED with respect to sanitary features of design as of this date with the following stipulations:

1. Upon completion of construction, disinfection shall be strictly in accordance with the procedure designated in the State Regulations, which reads as follows:

"A water distribution system, including storage distribution tanks, repaired portions of existing systems, or all extensions to existing systems, shall be thoroughly disinfected before being placed into service. A water distribution system shall disinfect with chlorine or chlorine compounds, in amounts as to produce a concentration of at least fifty (50) ppm and a residual of at least twenty-five (25) ppm at the end of 24-hours (24) and the disinfection shall be followed by a thorough flushing."

New or repaired water distribution lines shall not be placed into service until bacteriological samples taken at the points specified in 401 KAR 8:150 Section 4 (2) are examined and are shown to be negative following disinfection.

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2. A minimum pressure of 30 psi must be available on the discharge side of all meters.
3. Water mains shall be laid at least 10 feet horizontally from any existing or proposed sewer. A sewer is defined as any conduit conveying fluids other than potable water. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, this office may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer. This deviation will not be allowed for force mains.

Water mains crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, one full length of the water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required.

4. Water lines within a 200 foot radius of oil or gasoline lines, underground storage tanks, petroleum storage tanks or pumping stations shall be constructed of ductile iron pipe. Pipe joint materials which are resistant to permeation of the petroleum products shall be used within the 200 foot radius.
5. The overflow and the main drain for the proposed tank must extend 10 feet from the base of the tank and discharge into a 2 ft. x 2 ft. x 2 ft. crushed stone pit or onto a splash pad. The outlet must be equipped with a noncorrodible screen installed within the pipe at a location least susceptible to damage by vandalism.

6. Upon completion of construction, disinfection shall be strictly in accordance with the procedure designated in the State Regulations, which reads as follows:

"A water distribution system, including storage distribution tanks, repaired portions of existing systems, or all extensions to existing systems, shall be thoroughly disinfected before being placed into service. A water distribution system shall disinfect with chlorine or chlorine compounds, in amounts as to produce a concentration of at least fifty (50) ppm and a residual of at least twenty-five (25) ppm at the end of 24-hours (24) and the disinfection shall be followed by a thorough flushing."

New or repaired water distribution lines shall not be placed into service until bacteriological samples taken at the points specified in 401 KAR 8:150 Section 4 (2) are examined and are shown to be negative following disinfection.

An alternate acceptable method for storage tank disinfection is as follows:

Fill tank with enough water (containing a free chlorine concentration of at least 250 mg/l) to spray all inside tank surfaces with the chlorinated water. Repeat the spraying again at no less than 1.0 hour from the end of the first spraying. Drain the tank at no less than 30 minutes from end of second spraying before filling for use.

7. During the process of tapping the asbestos concrete main, the contractor shall conform to OSHA regulations governing the handling of hazardous waste.

Pieces of asbestos concrete resulting from the tap shall be double bagged, placed in a rigid container and disposed of in an approved landfill.

Bill Hill Branch
May 10, 1999
Page four

8. The minimum size of water main for providing fire protection and serving fire hydrants shall be six inch diameter. Larger size mains will be required, if necessary, to allow the withdrawal of the required fire flow while maintaining the minimum residual pressure. Hydrants on lines either less than six inches in diameter or served by other lines less than six inches in diameter shall be for flushing purposes only.
9. The interior coating system for the proposed storage tank must be of a type approved by the Division of Water for use in contact with potable water.
10. When this project is completed, the owner shall submit a written certification to the Division of Water that the above referenced water supply facilities have been constructed and tested in accordance with the approved plans and specifications and the above stipulations. Such certification shall be signed by a registered professional engineer.

This approval has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this approval does not relieve the applicant from the responsibility of obtaining any other approvals, permits or licenses required by this Cabinet and other state, federal and local agencies.

Unless construction of this project is begun within one year from the date of approval, the approval shall expire. If you have any questions concerning this project, please contact Donna Marlin at 502/564-2225, extension 541.

Sincerely,



Vicki L. Ray, Branch Manager
Drinking Water Branch
Division of Water

VLR:DSM:lm

Enclosures

Bill Hill Branch
May 10, 1999
Page five

C: Summit Engineering, Inc.
Floyd County Health Department
Public Service Commission
Division of Plumbing w/ customer list
Hazard Regional Office
Drinking Water Files

CERTIFICATE OF CHAIRMAN OF
BEAVER-ELKHORN WATER DISTRICT

I, HUBERT HALBERT, hereby certify that I am the duly qualified and acting Chairman of Beaver-Elkhorn Water District of Floyd County, Kentucky, and that said District is in the process of arranging to finance the construction of an extension to its existing waterworks system of the District in cooperation with Summit Engineering, Inc., Pikeville, Kentucky, the Engineer for the District.

Based on information furnished to me by said Engineers and/or by the Accounts for the District, I hereby certify as follows:

1. That the proposed plans and specifications for the Project have been designed to meet the minimum construction and operating requirements set out in 807 KAR 5:066, Section 5 (3-4), Section 6 (1), Section 7-8, Section 9 (1-3), Section 10 (1) and Section 11.
2. That at least one copy of a Financial Plan, Financial Capability Analysis and District Assessment is signed, sealed and dated by a registered professional engineer.
3. That all other state approvals and or permits have already been obtained.
4. That an increase in water rates will not be necessary for the construction of this project.
5. That it is now contemplated that construction of the Project will begin on or after July 1, 1999 and will end within six months after start of construction.

IN TESTIMONY WHEREOF, witness my signature this the 11th day of June, 1999.

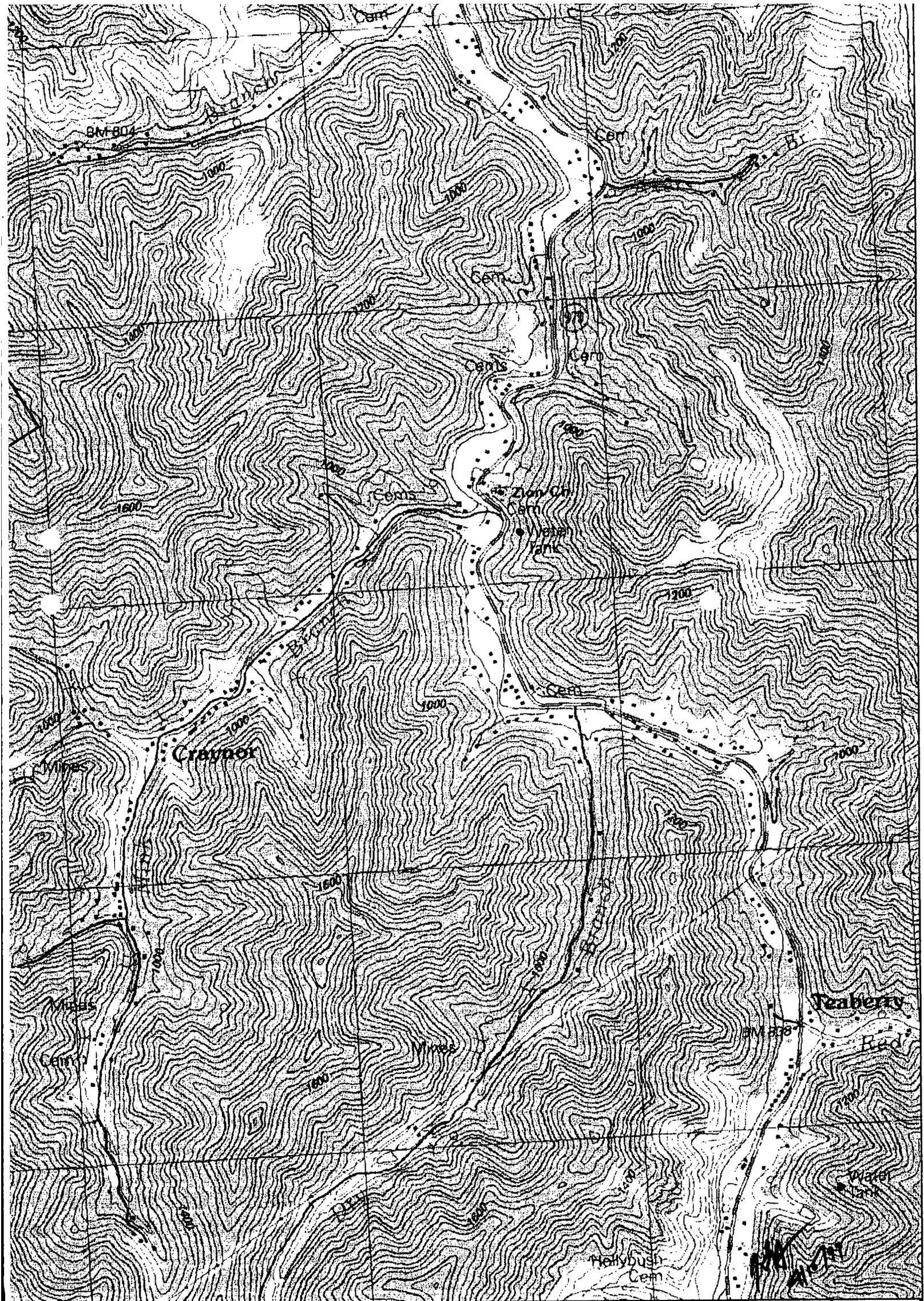

Chairman
Beaver-Elkhorn Water District

COMMONWEALTH OF KENTUCKY)
COUNTY OF FLOYD)

I, GARY E. BLANKENSHIP, the undersigned Notary Public in and for the state and county aforesaid, hereby certify that the foregoing statement was produced to me on this the 11th day of June 1999, by HUBERT HALBERT, Chairman of Beaver-Elkhorn Water District and was acknowledged before me to be his free act and deed.


Notary Public
In and For Said State and County

My commission expires: 1-22-2002



Key Map



SUMMIT
ENGINEERING
INC.

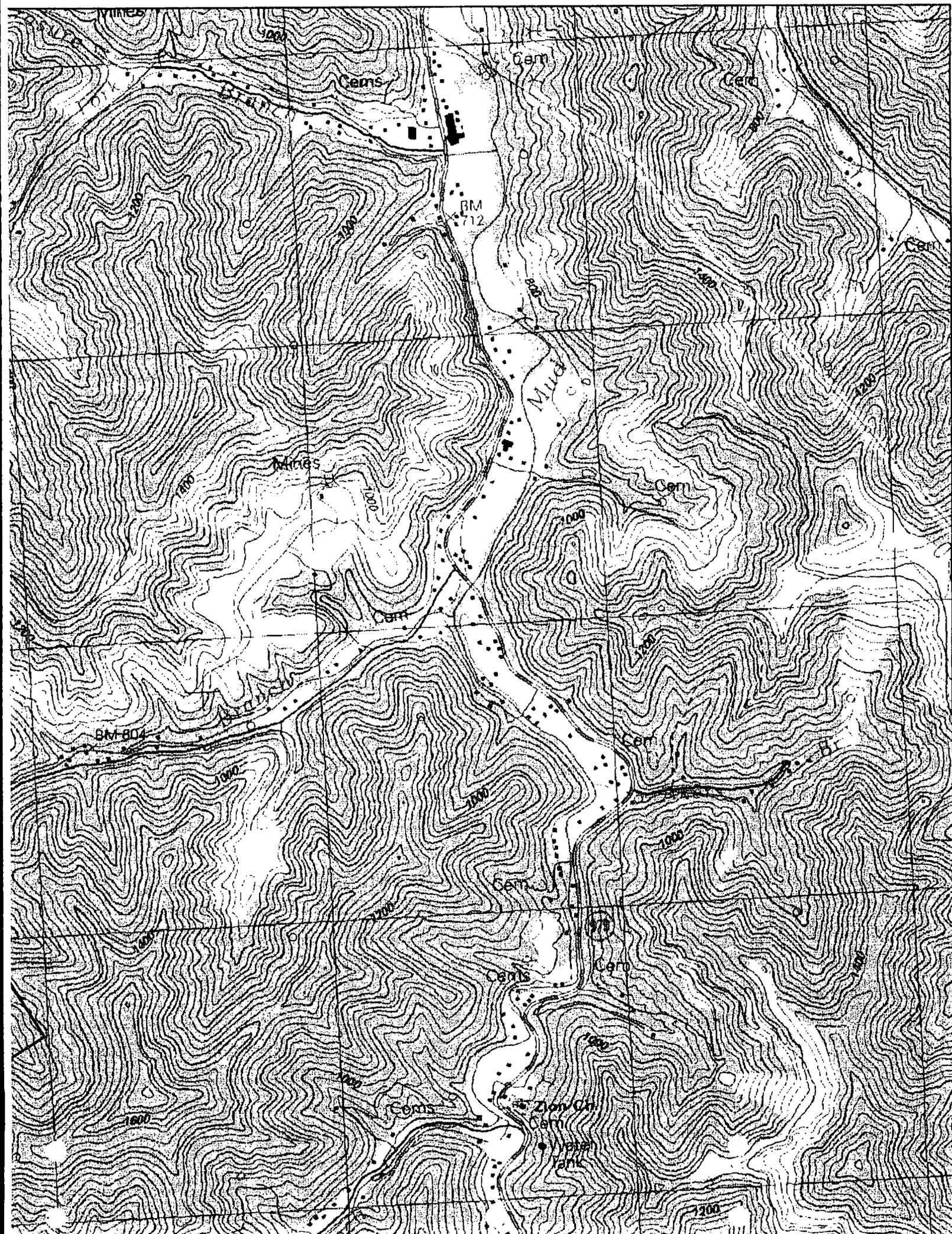
PIKEVILLE, KY
LEXINGTON, KY
GRUNDY, VA
LOGAN, WV

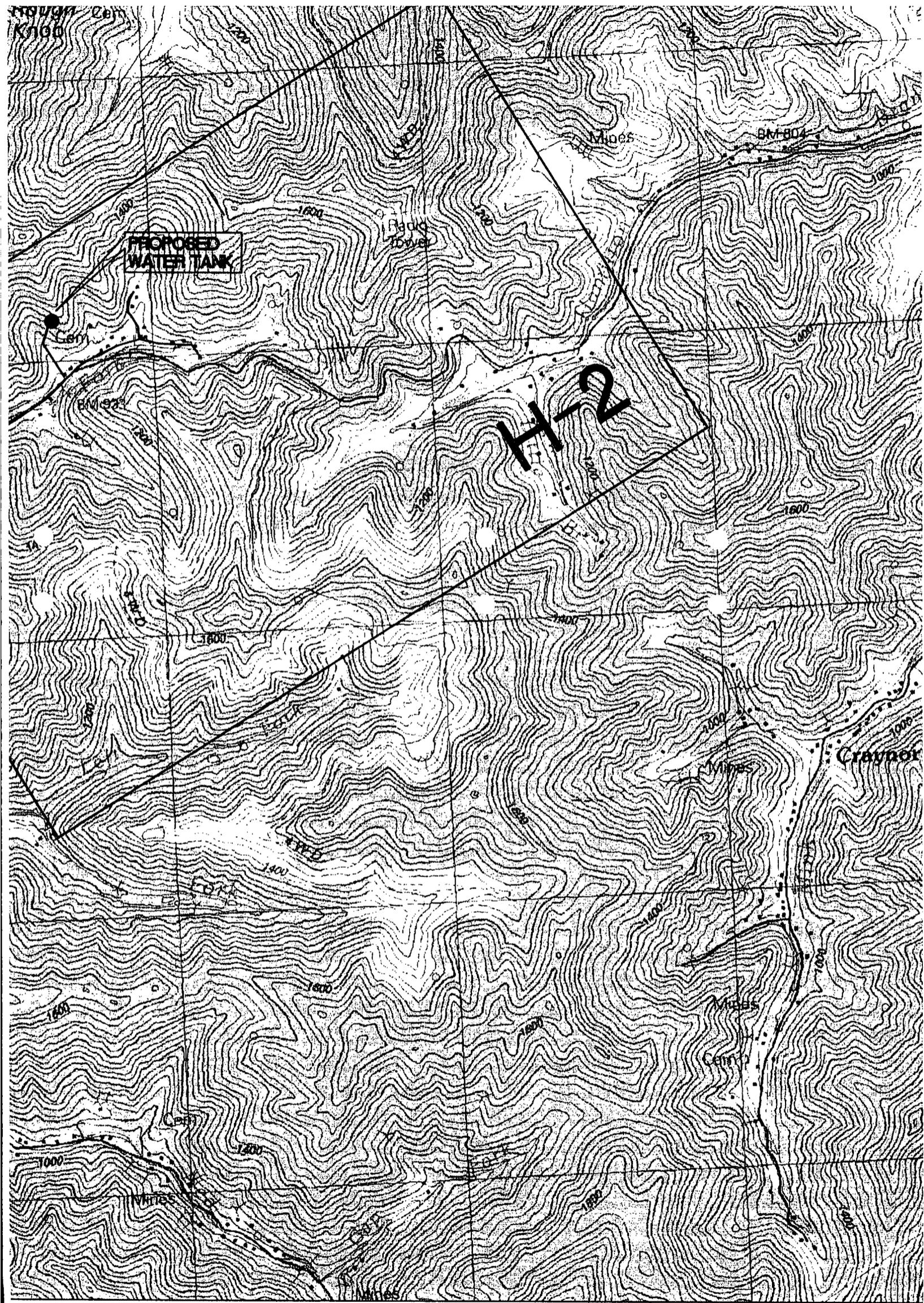
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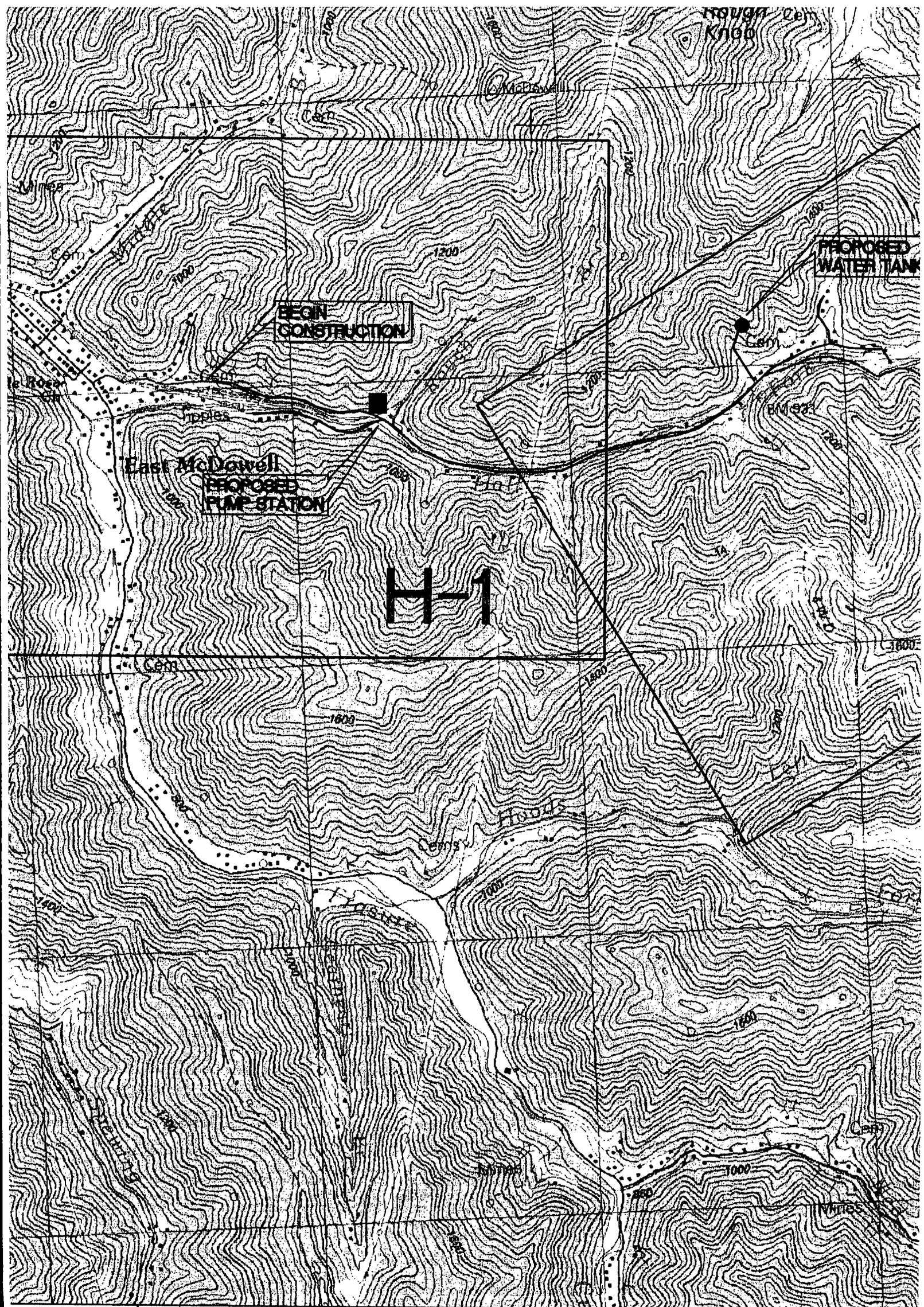




Beaver-Eikhorn Water District
HALL BRANCH WATER LINE EXTENSION

Floyd County, Kentucky

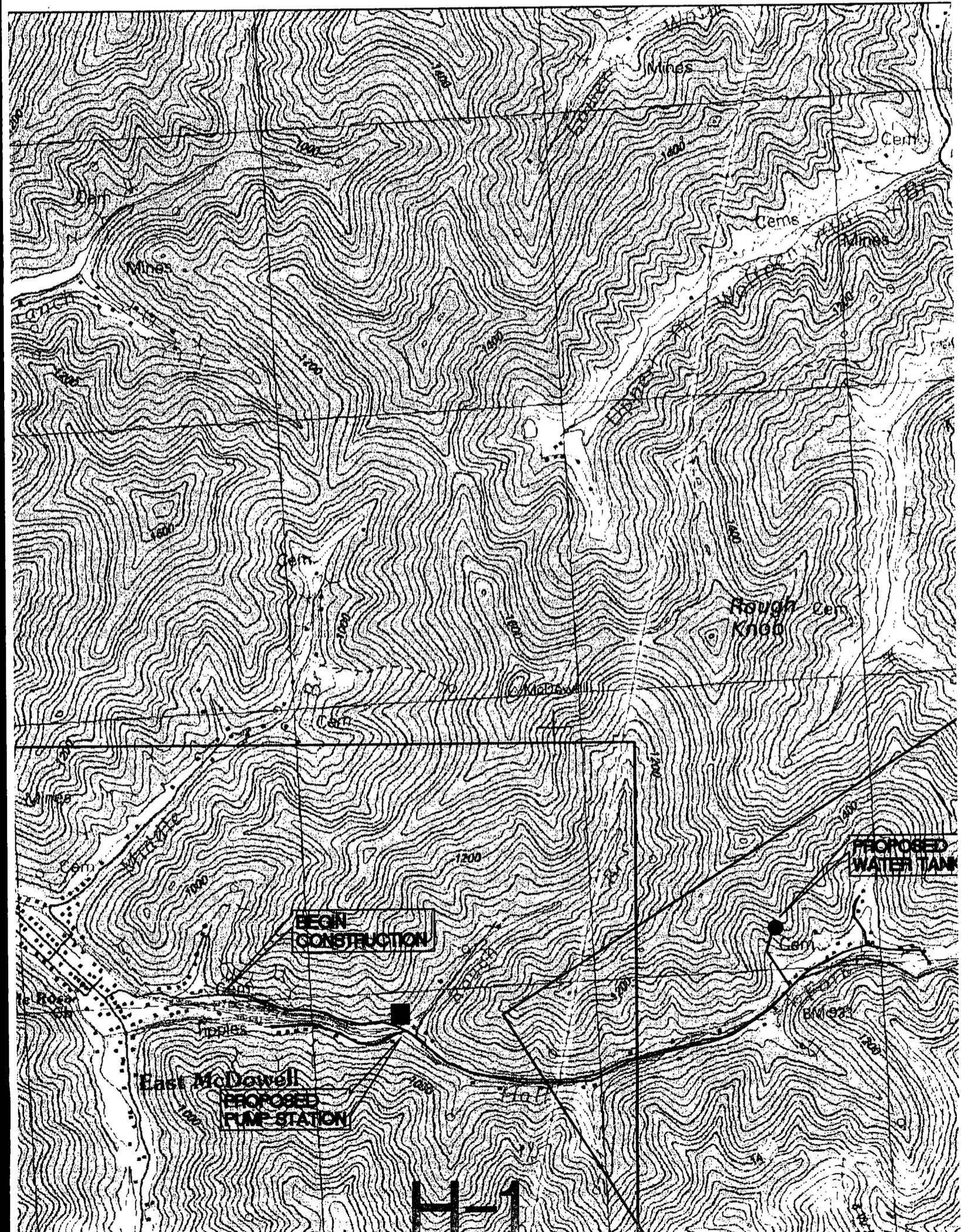
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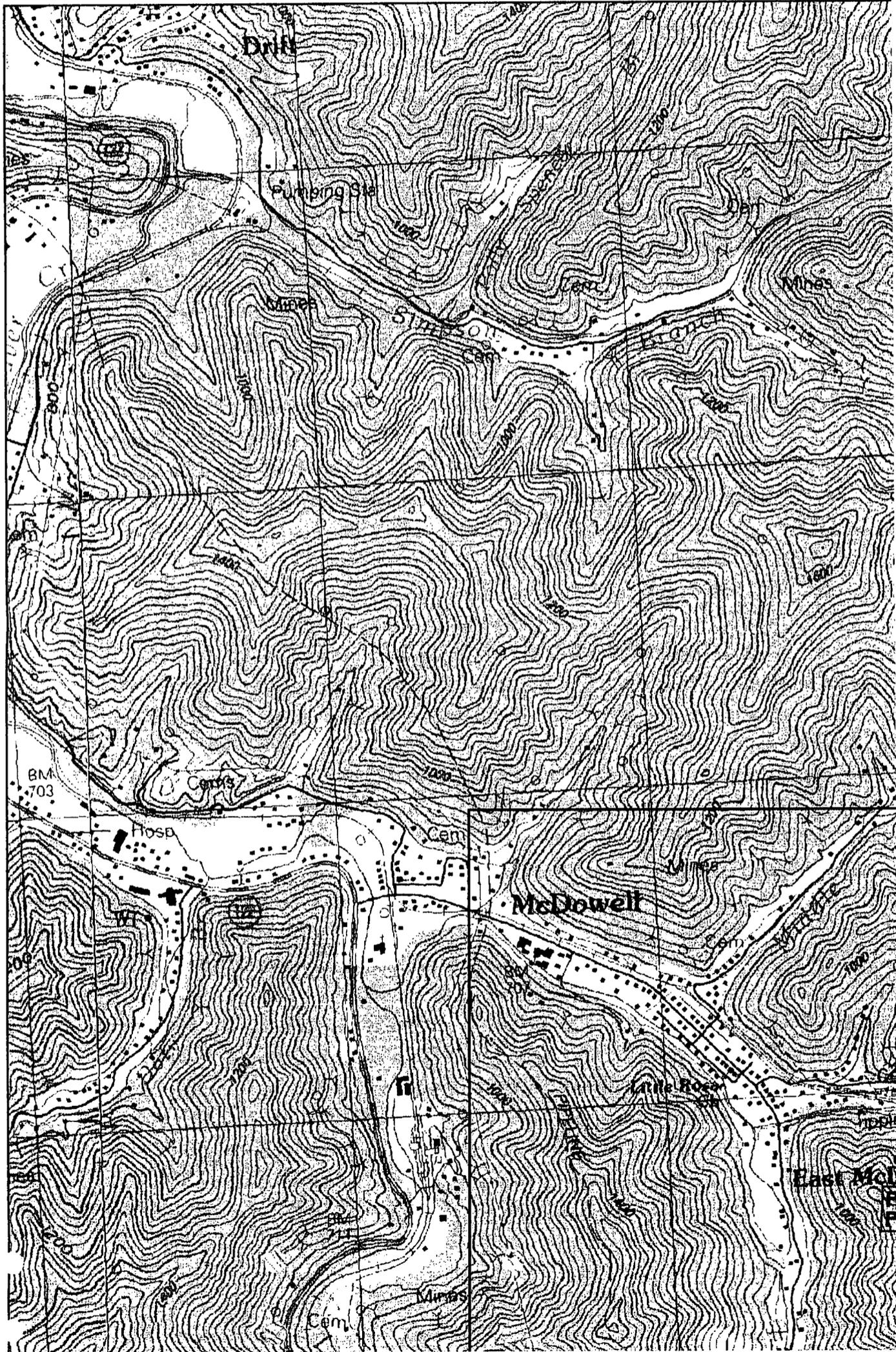
NUMBER OF REVISION	DATE	DESCRIPTION OF REVISION	DRAWN BY:	P. Hays
			CHECKED BY:	K. Howard
			APPROVED BY:	K. Howard

Beaver-Ell
HALL BRANCH V

Floyd



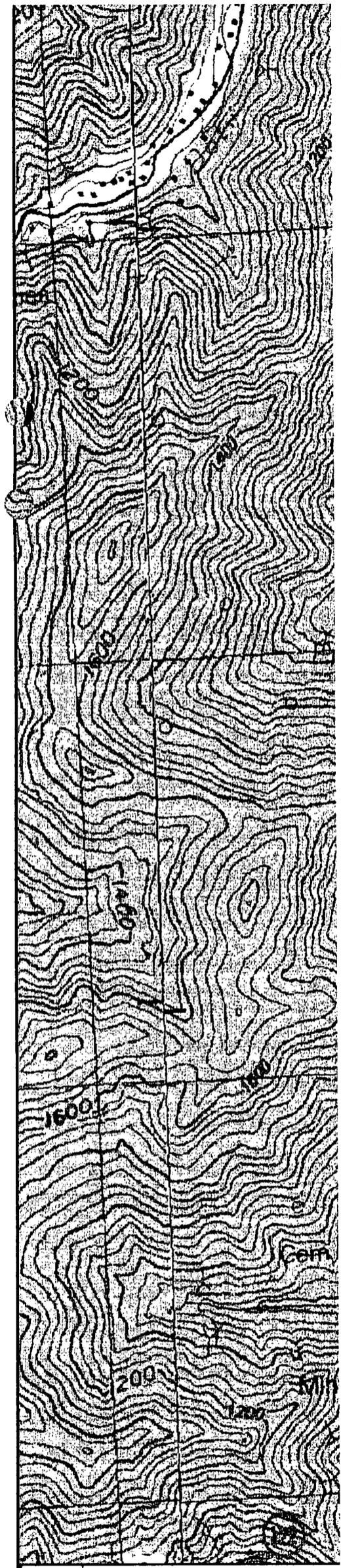
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X:\97 - 99 Civil\99-505 HALL BRANCH WATER (BEAVER)\bill hall branch water line extension\hall key map.dwg Tue Apr 13 16:39:24 1999 -A.H.



DATE	DESCRIPTION OF REVISION

RECEIVED

JUN 15 1999

PUBLIC SERVICE
COMMISSION

**SPECIFICATIONS AND
CONTRACT DOCUMENTS**

**BILL HALL BRANCH
WATER LINE EXTENSION**

CONTRACT NOS. 1, 2 AND 3

APRIL 13, 1999

SPECIFICATIONS
AND
CONTRACT DOCUMENTS

***BILL HALL BRANCH
WATER LINE EXTENSION***

CONTRACT NOS. 1, 2 AND 3

APRIL 13, 1999

SUMMIT ENGINEERING, INC.

120 Prosperous Pl.
Lexington, KY 40509
606/264-9860

101 Summit Drive
Pikeville, KY 45101
606/432-1447

P.O. Drawer 1800
Grundy, VA 24614
703/935-2126

233 Main Avenue
Logan, WV 25601
304/752-5038

P.O. Box 1035
Hazard, KY 41702
606/439-1497

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SECTION ONE**ADVERTISEMENT FOR BID**

Separate sealed bids for the construction of Contracts 1, 2 and 3 of the Bill Hall Branch Water Line Extension for the Beaver Elkhorn Water District will be received at the office of the Beaver Elkhorn Water District located on Kentucky Route 3188 near Martin, Kentucky until 2:00 p.m. on the ____ day of _____, 1999. Immediately following the closing time for the reception of the bids, all proposals which have been submitted in accordance with the contract documents will be publicly opened and read aloud in the meeting hall of the District Office. Bids received after the deadline will be returned to the Bidder unopened.

The major item of work for each of the contracts for which bids will be received may be generally described as follows:

- (1) Contract 1 - 11,940 LF of 4" water line, 1 - 20,000 gallon skid tank, 42 water meter sets and related appurtenances.
- (2) Contract 2 - 1 water booster pumping station.
- (3) Contract 3 - Supervisory control and data acquisition system for 1 pump station and 1 water storage tank.

The information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Forms of Bid Bond, Performance and Payment Bond, and other contract documents may be examined at the following locations:

Beaver Elkhorn Water District
96 Kentucky Route 3188
Martin, Kentucky 41649

F.W. Dodge Corporation
2525 Harrodsburg Road, Suite 230
Lexington, Kentucky 40504-3355

Summit Engineering, Inc.
120 Prosperous Place, Suite 101
Lexington, Kentucky 40509

Summit Engineering, Inc.
101 Summit Drive
Pikeville, Kentucky 41501

The Contract Documents may be obtained from:

Summit Engineering, Inc.
101 Summit Drive
Pikeville, Kentucky 41501

at a non-refundable cost of \$75.00. Checks for Contract Documents shall be payable to Summit Engineering, Inc. The OWNER and ENGINEER shall not be responsible for any full or partial sets of Contract Documents obtained from any other source. No bid will be considered unless submitted on the Bid Form provided with the Contract Documents.

Each bid must be accompanied by a Bid Bond, payable to the Beaver Elkhorn Water District, in an amount of not less than 10% of the bid. Certified checks are acceptable as bond. Should any Bid be rejected, the Bid Security will be returned to the Bidder.

A Pre-Bid meeting will be conducted by representatives of Summit Engineering, Inc. Interested contractors are to meet at the offices of the Beaver Elkhorn Water District at _____ a.m. on _____, _____, 1999.

Federal wage and hour provisions apply to this project. State wage and hour provisions apply to this project.

The successful Bidder will be required to furnish Performance and Payment Bonds, each in amount equal to the Contract Price.

The OWNER reserves the right to reject any and all Bids or to let a contract in whole or in part and to waive formalities.

Date

Chairman, Beaver Elkhorn Water District

SECTION TWO
INSTRUCTIONS TO BIDDERS

<u>ARTICLE</u>	<u>CONTENTS</u>	<u>PAGE</u>
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SECTION TWO

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS - Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract (No. 1910-8, 1983 ed.) have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to OWNER, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom OWNER (on the basis of OWNER'S evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
2. COPIES OF BIDDING DOCUMENTS
 - 2.1 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from the ENGINEER.
 - 2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
 - 2.3 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.
3. QUALIFICATIONS OF BIDDERS
 - 3.1 Each Bidder shall submit with his proposal, a form of Bidder's Qualifications (see Form of Proposal) as evidence of the Bidders qualifications with respect to equipment and personnel, technical experience, past performance record, and financial status.
 - 3.2 The OWNER may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the OWNER that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 4.1 It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work, (c) consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify ENGINEER of all conflicts, errors or discrepancies in the Contract Documents.
- 4.2 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities or others, and OWNER does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.
- 4.3 Before submitting a Bid each Bidder will be responsible to make or obtain such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 4.4 On request in advance, OWNER will provide each Bidder access to the site to conduct such exploration and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.
- 4.5 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by CONTRACTOR. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.
- 4.6 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

5. INTERPRETATIONS AND ADDENDA

- 5.1 All questions about the meaning or intent of the Contract Documents are to be directed to ENGINEER. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Questions received less than three (3) days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or ENGINEER.

6. BID SECURITY

- 6.1 Each Bid must be accompanied by Bid Security made payable to OWNER in an amount of ten (10) percent of the bid amount and in the form of a certified or bank check or a Bid Bond (on form attached, if a form is prescribed) issued by a surety meeting the requirements of Paragraph 5.1 of the General Conditions.
- 6.2 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within fifteen (15) days after the Notice of Award, OWNER may annul the Notice of Award and the Bid security of other Bidders whom OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of the seventh day after the Effective Date of the Agreement or the ninety-first day after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening.
7. CONTRACT TIME - The numbers of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Bid Form and the Agreement.
8. LIQUIDATED DAMAGES - Provisions for liquidated damages are set forth in the Agreement.

9. SUBSTITUTE OR "OR EQUAL" ITEMS - The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement. The procedure for submission of any such application by CONTRACTOR and consideration by ENGINEER is set forth in Paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions and may be supplemented in the General Requirements.

10. SUBCONTRACTORS, SUPPLIERS AND OTHERS

- 10.1 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within seven (7) days after the Bid opening submit to OWNER a list of all such Subcontractors, Suppliers and other persons and organizations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualifications for each such Subcontractor, Supplier, person or organization if requested by OWNER. If OWNER or ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, he may, before the Notice of Award is given, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price.

If apparent Successful Bidder declines to make any such substitution, OWNER may award the contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any Subcontractor, Supplier, other person or organization listed and to whom OWNER or ENGINEER does not make written objections prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.8.2 of the General Conditions.

- 10.2 No CONTRACTOR shall be required to employ any Subcontractor, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

11. BID FORM

- 11.1 The Bid Form is included with the Bidding Documents; additional copies may be obtained from ENGINEER (or the issuing office).
- 11.2 All blanks on the Bid Form must be completed in ink or by typewriter.

- 11.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below signature.
- 11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- 11.5 All names must be typed or printed below the signature.
- 11.6 The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- 11.7 The address and telephone number for communications regarding the Bid must be shown.

12. SUBMISSION OF BIDS

- 12.1 Prospective Bidders are furnished one copy of the Bidding Documents with one separate unbound copy of the Bid Form, Bidders Qualification Form, and Bid Bond. The unbound copy of the Bid Form and Bidders Qualification Form are to be completed and submitted with the Bid Security and the following data: (1) Certificate of Compliance with Labor Regulations (if required), and (2) a list of subcontractors (if available).
- 12.2 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project Title and name and address of the Bidder and accompanied by the Bid security and other related documents. If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

13. MODIFICATION AND WITHDRAWAL OF BIDS

- 13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where bids are to be submitted at any time prior to the opening of Bids.
- 13.2 If, within twenty-four (24) hours after Bids are opened, any Bidder files a duly signed, written notice with OWNER and promptly thereafter demonstrates to the reasonable satisfaction of OWNER that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

14. OPENING OF BIDS - Bids will be opened and (unless obviously non-responsive) read aloud publicly. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to Bidders after the opening of Bids.
15. BIDS TO REMAIN SUBJECT TO ACCEPTANCE - All bids will remain subject to acceptance for the number of days set forth in the Form of Proposal, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to that date.
16. AWARD OF CONTRACT
 - 16.1 OWNER reserves the right to reject any and all Bids, to waive any and all formalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful Bidder, and the right to disregard all nonconforming, nonresponsive, unbalanced or conditional Bids. Also, OWNER reserves the right to reject the Bid of any Bidder if OWNER believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by OWNER. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
 - 16.2 In evaluating Bids, OWNER will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.
 - 16.3 OWNER may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identify of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. OWNER also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.
 - 16.4 OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to OWNER'S satisfaction within the prescribed time.
 - 16.5 If the contract is to be awarded, it will be awarded to the Bidder whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

- 16.6 If the contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid opening.
17. CONTRACT SECURITY - Paragraph 5.1 of the General Conditions and the Supplementary Conditions set forth OWNER'S requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by the required Performance and Payment Bonds.
18. SIGNING OF AGREEMENT - When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within fifteen (15) days thereafter CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds. Within ten (10) days thereafter OWNER shall deliver one fully signed counterpart to CONTRACTOR. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.
19. RETAINAGE - Provisions concerning retainage and CONTRACTOR'S rights to deposit securities in lieu of retainage are set forth in the Agreement.

SECTION THREE
FORM OF PROPOSAL

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PROPOSAL BONDS AND CERTIFICATIONS

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SECTION THREE - ARTICLE 1

**FORM OF PROPOSAL
CONTRACT NO. 1**

AN INDIVIDUAL
A PARTNERSHIP
A CORPORATION

DATE: _____

Proposal for Contract No. 1 – Bill Hall Branch Water Line Extension

TO: **OWNER**

I
WE _____
Name of Bidder

Address of Bidder

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for ninety (90) days after the day of Bid opening. BIDDER will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of OWNER'S Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - a) BIDDER has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date

Number

- b) BIDDER has familiarized itself fully with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- c) BIDDER has made or obtained such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance, or furnishing of the Work and which BIDDER deems necessary to determine its Bid for performing and furnishing the Work in accordance with the conditions of the Contract Documents.
- d) BIDDER has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities are or will be required by BIDDER in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.
- e) BIDDER has given ENGINEER written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER.

4. The BIDDER declares that it understands that unit quantities shown in the Proposal are approximate only, are subject to increase or decrease, and that should the quantities of any of the items of work be increased, the undersigned proposes to do additional work at the unit prices set out herein; and should quantities be decreased, the undersigned will make no claim for anticipated profits.

**BID SCHEDULE
FOR CONTRACT NO. 1
BILL HALL BRANCH WATER LINE EXTENSION
FLOYD COUNTY, KENTUCKY (NOTE 1)**

ITEM NO.	ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
1	GENERAL				
1a	Mobilization/DeMobilization (See Note 2)	1	LS		
1b	Seeding	1	LS		
1c	Special Pipe Bedding (See Note 3)	100	TON		
2	CONNECTIONS				
2a	Connect to Existing 6" Water Line	1	EA		
3	WATER LINE				
3a	4" D.I. Water Line, CL 350, PJ (See Note 4)	90	LF		
3b	4" PVC Water Line, SDR 17 (See Note 4)	11940	LF		
4	VALVES				
4a	4" Resilient Wedge Gate Valve, MJ, 250 psi	11	EA		
4b	Air Relief	1	EA		
5	FITTINGS				
5a	4"x4"x4" Compact DI Tee, MJ	5	EA		
5b	4"x4"x3" Compact DI Tee, MJ	4	EA		
5c	6"x4" Reducer	1	EA		
6	ENCASEMENTS				
6a	Bore and Encase for 4" Water Line	146	LF		
6b	Open Cut - Encase for 4" Water Line	18	LF		
7	SERVICE CONNECTIONS				
7a	5/8" x 3/4" Water Meter Set with PRV	42	EA		
7B	3/4" HDPE Service Line (SDR 9.3)	1340	LF		
8	HYDRANTS				
8a	Blow-Off with Valve	4	EA		
9	SURFACE REPLACEMENT (FOR MAIN LINE ONLY)				
9a	Bituminous Pavement Replacement w/o Concrete Sub Slab	50	LF		
9b	Concrete Pavement Replacement	50	LF		
10	PUMPS, STORAGE, AND PRV's				
10b	20,000 Gal. Skid Tank complete, in-place with valve pit, security fence, power and access road	1	LS		
TOTAL BASE BID CONTRACT NO. 1					
DEDUCTIVE ALTERNATE					
1 If concrete foundation slab for skid tank is deducted from contract requirement deduct the following amount from the Base Bid for Contract No. 1.					
NOTES					
1. The method of payment varies with the individual item and is described at the close of each section of the Technical Specifications.					
2. The amount bid for "Mobilization/DeMobilization" may not exceed 3% of the Base Bid Total.					
3. Special pipe bedding may only be installed on written order of ENGINEER.					
4. Contract will be awarded on the basis of the lowest base bid without consideration of deductive alternates.					

5. BIDDER agrees that the work will be substantially complete and completed and ready for final payment in accordance with Paragraph 14.13 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.

7. The following documents are attached to and made a condition of the Bid:

- a) BIDDER's Certification
- b) BIDDER's Questionnaire with supporting data.
- c) A tabulation of Subcontractors, Suppliers, and other persons and organizations required to be identified in this Bid.

8. BIDDER declares that this Bid is genuine and not made in the interest or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from Bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

9. Communications concerning this Bid should be addressed to the following address:

10. The terms used in the Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED ON: _____, 19__

If BIDDER is:

An Individual

By _____ (SEAL)
(Individual's Name)

doing business as _____

Business address: _____

Phone No.: _____

A Partnership

By _____ (SEAL)
(Firm Name)

_____ (General Partner)

Business address: _____

Phone No.: _____

A Corporation

By _____ (Corporation Name)

_____ (state of incorporation)

By _____ (name of person authorized to sign)

_____ (Title)

(Corporate Seal)

Attest _____ (Secretary)

Business address: _____

Phone No.: _____

A Joint Venture

By _____ (Name)

_____ (Address)

By _____ (Name)

_____ (Address)

(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

SECTION THREE - ARTICLE 2

FORM OF PROPOSAL
CONTRACT NO. 2

AN INDIVIDUAL
A PARTNERSHIP
A CORPORATION

DATE: _____

Proposal for Contract No. 2 – Bill Hall Branch Water Line Extension

TO: _____
OWNER

I
WE _____
Name of Bidder

Address of Bidder

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for ninety (90) days after the day of Bid opening. BIDDER will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of OWNER'S Notice of Award.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

a) BIDDER has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date

Number

- b) BIDDER has familiarized itself fully with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- c) BIDDER has made or obtained such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance, or furnishing of the Work and which BIDDER deems necessary to determine its Bid for performing and furnishing the Work in accordance with the conditions of the Contract Documents.
- d) BIDDER has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities are or will be required by BIDDER in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.
- e) BIDDER has given ENGINEER written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER.

4. The BIDDER declares that it understands that unit quantities shown in the Proposal are approximate only, are subject to increase or decrease, and that should the quantities of any of the items of work be increased, the undersigned proposes to do additional work at the unit prices set out herein; and should quantities be decreased, the undersigned will make no claim for anticipated profits.

Bidder agrees to provide all the CONTRACT NO. 2 work described in the specifications and shown on the plans for the following unit prices:

**BID SCHEDULE
FOR CONTRACT NO. 2
BILL HALL BRANCH WATER LINE EXTENSION
FLOYD COUNTY, KENTUCKY (NOTE 1)**

ITEM NO.	ITEM	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ESTIMATED AMOUNT
10	PUMPS, STORAGE, AND PRV's				
10a	50 GPM Water Booster Pumping Station	1	LS		
	TOTAL BASE BID CONTRACT NO. 2				
	DEDUCTIVE ALTERNATE				
	If hypochlorinator is deducted from contract requirement deduct the following amount from the Base Bid for Contract No. 2.				
NOTES					
1. Contract will be awarded on the basis of the lowest base bid without consideration of deductive alternates.					

5. BIDDER agrees that the work will be substantially complete and completed and ready for final payment in accordance with Paragraph 14.13 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.

7. The following documents are attached to and made a condition of the Bid:

- a) BIDDER's Certification
- b) BIDDER's Questionnaire with supporting data.
- c) A tabulation of Subcontractors, Suppliers, and other persons and organizations required to be identified in this Bid.

8. BIDDER declares that this Bid is genuine and not made in the interest or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from Bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

9. Communications concerning this Bid should be addressed to the following address:

10. The terms used in the Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED ON: _____, 19__

SECTION THREE - ARTICLE 3

FORM OF PROPOSAL
CONTRACT NO. 3

AN INDIVIDUAL
A PARTNERSHIP
A CORPORATION

DATE:

Proposal for Contract No. 3 – Bill Hall Branch Water Line Extension

TO: _____
OWNER

I
WE _____
Name of Bidder

Address of Bidder

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for ninety (90) days after the day of Bid opening. BIDDER will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of OWNER'S Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - a) BIDDER has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date

Number

- b) BIDDER has familiarized itself fully with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- c) BIDDER has made or obtained such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance, or furnishing of the Work and which BIDDER deems necessary to determine its Bid for performing and furnishing the Work in accordance with the conditions of the Contract Documents.
- d) BIDDER has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities are or will be required by BIDDER in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.
- e) BIDDER has given ENGINEER written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER.

4. The BIDDER declares that it understands that unit quantities shown in the Proposal are approximate only, are subject to increase or decrease, and that should the quantities of any of the items of work be increased, the undersigned proposes to do additional work at the unit prices set out herein; and should quantities be decreased, the undersigned will make no claim for anticipated profits.

5. BIDDER agrees that the work will be substantially complete and completed and ready for final payment in accordance with Paragraph 14.13 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.

7. The following documents are attached to and made a condition of the Bid:

- a) BIDDER's Certification
- b) BIDDER's Questionnaire with supporting data.
- c) A tabulation of Subcontractors, Suppliers, and other persons and organizations required to be identified in this Bid.

8. BIDDER declares that this Bid is genuine and not made in the interest or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from Bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

9. Communications concerning this Bid should be addressed to the following address:

10. The terms used in the Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED ON: _____, 19

If BIDDER is:

An Individual

By _____ (SEAL)
(Individual's Name)

doing business as _____
Business address: _____

Phone No.: _____

A Partnership

By _____ (SEAL)
(Firm Name)

(General Partner)

Business address: _____

Phone No.: _____

A Corporation

By _____
(Corporation Name)

(state of incorporation)

By _____
(name of person authorized to sign)

(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____

Phone No.: _____

A Joint Venture

By _____
(Name)

(Address)

By _____
(Name)

(Address)

(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above.)

PROPOSAL - BID BONDS AND CERTIFICATIONS

ALL OF THE FOLLOWING FORMS MUST BE COMPLETED AND ATTACHED TO EACH BID SUBMITTED. BIDS WITH INCOMPLETE FORMS SHALL BE DECLARED NON-RESPONSIVE AND WILL BE REJECTED.

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SECTION THREE - ARTICLE 4

BIDDER'S CERTIFICATION

SITE AND CONTRACT DOCUMENT INSPECTION

BILL HALL BRANCH WATER LINE EXTENSION

The undersigned bidder for Contract No. _____ certifies that he has thoroughly examined the site and informed himself fully regarding the conditions under which he will be obligated to operate and that in any way affect the Work, and knows, understands and accepts the existing conditions.

The undersigned bidder further certifies that he has thoroughly reviewed the Contract Documents and has had the opportunity, as provided in the Instructions to Bidders to ask questions of the ENGINEER concerning the Contract Documents. Failure to submit this certification with the Bid shall result in the rejection of that Bid.

BIDDER _____

BY _____

NAME AND TITLE _____

SECTION THREE - ARTICLE 5

BIDDERS QUESTIONNAIRE

It is the intention of the OWNER to award this contract to a Bidder competent to perform and complete the Work in a satisfactory manner. Bidders must be able to demonstrate compliance with the experience requirements of the specifications. Bidders shall list projects demonstrating their qualifications on the Bidders Questionnaire and attach same to the Bid Form. Failure of Bidders to comply with minimum experience criteria shall result in OWNER's rejection of Bidder's submittal.

The undersigned warrants the truth and accuracy of all statements and answers herein contained. Include additional sheets as necessary.

- 1. How many years has your organization been in business as a (circle one)
General Contractor/Subcontractor?

- 2. List the projects which demonstrate Contractor's prequalifications.

<u>Date Completed</u>	<u>Project Title</u>	<u>Location</u>	<u>Owner</u>	<u>Phone Number</u>	<u>Contract Amount</u>
-----------------------	----------------------	-----------------	--------------	---------------------	------------------------

A. _____

B. _____

C. _____

D. _____

E. _____

- 3. Have you ever failed to complete work awarded to you: if so, where and why?

4. Have you personally inspected the site of the proposed work? Describe any anticipated problems with the site and your proposed solutions:

5. Will you subcontract any part of this Work? If so, describe which portions:

6. Please list the names and addresses of the subcontractors to be used for the portions of the work listed below. Additional information will be required in accordance with the Instruction to Bidders.

7.

Subcontractor 1 - _____
(Portion of the Work)

Name: _____
Address: _____
Phone: _____

Subcontractor 2 - _____
(Portion of the Work)

Name: _____
Address: _____
Phone: _____

Subcontractor 3 - _____
(Portion of the Work)

Name: _____
Address: _____
Phone: _____

7. Please list the equipment that you own that is available for the Project?

<u>EQUIPMENT DESCRIPTION</u>	<u>HOURS</u>	<u>OWNED</u>	<u>LEASED</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

8. Submit or attach a "Confidential Financial Statement" in a sealed envelope. The statement of the apparent low bidder will be opened and reviewed. The statements of the unsuccessful bidders will be returned unopened.

9. State the true and exact, correct, and complete name under which you do business. BIDDER IS: _____

SOLE PROPRIETORSHIP

_____ (SEAL)

(Individual's Signature)

(Individual's Name)

doing business as _____

Business address: _____

Phone No.: _____ Fax No. _____

A PARTNERSHIP

_____ (SEAL)

(Partnership Name)

(General Partner's Signature)

(General Partner's Name)

Business address: _____

Phone No.: _____ Fax No. _____

A CORPORATION

(Corporation Name)

(State of Incorporation)

By _____

(Name of Person Authorized to Sign)

(Title)

(Authorized Signature)

(Corporate Seal)

Attest _____

(Secretary)

Business address: _____

Phone No.: _____ Fax No. _____

10. List the following in connection with the Surety which is providing the Bid Bond:

Surety Name: _____

Surety Address: _____

Name and Address of Surety's Resident Agent for service of process in

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,
 _____ as Principal, and
 _____ as Surety, are hereby held and
 firmly bound unto the Beaver Elkhorn Water District as OWNER in the penal sum
 of _____ for the payment of which, well and
 truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 19_____.
 The Condition of the above obligation is such that whereas the Principal has submitted to
Beaver Elkhorn Water District a certain BID, attached hereto and hereby made a part
 hereof to enter into a contract in writing, for the

Contract No. 1 – Bill Hall Branch Water Line Extension

Contract No. 2 – Bill Hall Branch Water Line Extension

Contract No. 3 – Bill Hall Branch Water Line Extension
 (Strike Out Inapplicable Contract)

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attachment hereto (Properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____(L.S.)
Principal

Surety

By: _____

SECTION FOUR
CONTRACT AGREEMENT

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4	Contract Price.....	CON-2
5	Payment Procedures.....	CON-2
6	Interest.....	CON-2
7	Contractor's Representations.....	CON-3
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9	Miscellaneous.....	CON-4
	CONTRACT NO. 2	
1	Work.....	CON-6
2	Engineer.....	CON-6
3	Contract Time.....	CON-6
4	Contract Price.....	CON-7
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6	Interest.....	CON-8
7	Contractor's Representations.....	CON-8
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CONTRACT NO. 3

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2	Engineer.....	CON-11
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4	Contract Price.....	CON-12
5	Payment Procedures.....	CON-12
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SECTION FOUR

CONTRACT AGREEMENT - CONTRACT NO. 1

THIS AGREEMENT is dated as of the ____ day of _____, in the year ____ by and between Beaver Elkhorn Water District (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

The CONTRACTOR shall furnish all the materials and perform all of the work described in the specifications and/or shown on the drawings entitled:

Contract No. 1 – Bill Hall Branch Water Line Extension

Article 2. ENGINEER

The Project has been designed by Summit Engineering, Inc. who is hereinafter called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME

- 3.1 The Work will be substantially completed within 60 days from the date when the Contract Time commences to run as provided in paragraph 2.3 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions within 70 days from the date when the Contract Time commences to run.
- 3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER zero (\$0.00) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER three

hundred seventy five dollars (\$375.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE

4.1 OWNER shall pay CONTRACTOR for completion of the work in accordance with the Contract Documents in current funds at the prices established in the attached Bid Schedule (Exhibit "A").

Article 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or about the first day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.1.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

90% of Work completed.

5.1.2 Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 95% of the Contract Price, less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

Article 6. INTEREST

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

Article 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2 CONTRACTOR has made or obtained such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the Work and which CONTRACTOR deems necessary for performing and furnishing the work in accordance with the conditions of the Contract Documents.

7.3 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

7.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests and data with the terms and conditions of the Contract Documents.

7.5 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1 This Agreement (pages CON-1 to CON-5, inclusive).
- 8.2 Exhibits to the Agreement (pages N/A to N/A, inclusive).
- 8.3 Performance and other Bonds (pages PPB-1 to PPB-4, inclusive).
- 8.4 General Conditions (pages GC-1 to GC-29, inclusive).

8.5 Supplementary Conditions (pages SC-1 to SC-26 , inclusive).

8.6 Specifications bearing the title Technical Specifications and consisting of 18 sections, as listed in table of contents thereof.

8.7 Drawings, consisting of ___ sheets dated _____ bearing the following general title:

Contract No. 1 – Bill Hall Branch Water Line Extension
Beaver Elkhorn Water District, Floyd County, Kentucky

8.8 Addenda number N/A to N/A, inclusive.

8.9 CONTRACTOR's Bid (Page P-3).

8.10 Documentation submitted by CONTRACTOR prior to Notice of Award (pages P-17 to P-24, inclusive).

8.11 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.

8.12 The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions.

Article 9. MISCELLANEOUS

9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, it partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, 19__.

OWNER

CONTRACTOR

By _____
(CORPORATE SEAL)

By _____
(CORPORATE SEAL)

Attest _____

Attest _____

Address for Giving Notices

Address for Giving Notices

(If OWNER is a public body attach evidence of authority to sign and resolution or other documents authorizing execution of Agreement.)

License No. _____
Agent for Service of Process:

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)

SECTION FOUR

CONTRACT AGREEMENT - CONTRACT NO. 2

THIS AGREEMENT is dated as of the ____ day of _____, in the year ____ by and between Beaver Elkhorn Water District (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

The CONTRACTOR shall furnish all the materials and perform all of the work described in the specifications and/or shown on the drawings entitled:

Contract No. 2 – Bill Hall Branch Water Line Extension

Article 2. ENGINEER

The Project has been designed by Summit Engineering, Inc. who is hereinafter called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME

- 3.1 The Work will be substantially completed within 45 days from the date when the Contract Time commences to run as provided in paragraph 2.3 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions within 60 days from the date when the Contract Time commences to run.
- 3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER zero dollars (\$0.00) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect,

refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER three hundred seventy-five dollars (\$375.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE

4.1 OWNER shall pay CONTRACTOR for completion of the work in accordance with the Contract Documents in current funds at the prices established in the attached Bid Schedule (Exhibit "A").

Article 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or about the first day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.1.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

90% of Work completed.

5.1.2 Upon Substantial completion, in an amount sufficient to increase total payments to CONTRACTOR to 95% of the Contract Price, less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

Article 6. INTEREST

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

Article 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2 CONTRACTOR has made or obtained such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the Work and which CONTRACTOR deems necessary for performing and furnishing the work in accordance with the conditions of the Contract Documents.

7.3 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

7.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests and data with the terms and conditions of the Contract Documents.

7.5 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1 This Agreement (pages CON-6 to CON-10, inclusive).

- 8.2 Exhibits to the Agreement (pages N/A to N/A, inclusive).
- 8.3 Performance and other Bonds (pages PPB-1 to PPB-4, inclusive).
- 8.4 General Conditions (pages GC-1 to GC-29, inclusive).
- 8.5 Supplementary Conditions (pages SC-1 to SC-26, inclusive).
- 8.6 Specifications bearing the title Technical Specifications and consisting of 18 sections, as listed in table of contents thereof.
- 8.7 Drawings, consisting of _____ sheets dated _____ bearing the following general title:
- Contract No. 2 – Bill Hall Water Line Extension
Beaver Elkhorn Water District, Floyd County, Kentucky
- 8.8 Addenda number N/A to N/A, inclusive.
- 8.9 CONTRACTOR's Bid (Page P-8).
- 8.10 Documentation submitted by CONTRACTOR prior to Notice of Award (pages P-17 to P-24, inclusive).
- 8.11 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.
- 8.12 The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions.

Article 9. MISCELLANEOUS

- 9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in

any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, it partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, 19____.

OWNER

CONTRACTOR

By _____
(CORPORATE SEAL)

By _____
(CORPORATE SEAL)

Attest _____

Attest _____

Address for Giving Notices

Address for Giving Notices

(If OWNER is a public body attach evidence of authority to sign and resolution or other documents authorizing execution

License No. _____
Agent for Service of Process:

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)

SECTION FOUR

CONTRACT AGREEMENT - CONTRACT NO. 3

THIS AGREEMENT is dated as of the ____ day of _____, in the year ____ by and between
Beaver Elkhorn Water District (hereinafter called OWNER) and
_____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

The CONTRACTOR shall furnish all the materials and perform all of the work described in the specifications and/or shown on the drawings entitled:

Contract No. 3 – Bill Hall Branch Water Line Extension

Article 2. ENGINEER

The Project has been designed by Summit Engineering, Inc. who is hereinafter called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME

- 3.1 The Work will be substantially completed within 45 days from the date when the Contract Time commences to run as provided in paragraph 2.3 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions within 60 days from the date when the Contract Time commences to run.
- 3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER zero dollars (\$0.00) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect,

refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER three hundred seventy-five hundred dollars (\$375.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE

4.1 OWNER shall pay CONTRACTOR for completion of the work in accordance with the Contract Documents in current funds at the prices established in the attached Bid Schedule (Exhibit "A").

Article 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or about the first day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.1.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

90% of Work completed.

5.1.2 Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 95% of the Contract Price, less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

Article 6. INTEREST

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

Article 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2 CONTRACTOR has made or obtained such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site, or otherwise which may affect cost, progress, performance or furnishing of the Work and which CONTRACTOR deems necessary for performing and furnishing the work in accordance with the conditions of the Contract Documents.

7.3 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.3 of the General Conditions.

7.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests and data with the terms and conditions of the Contract Documents.

7.5 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1 This Agreement (pages CON-11 to CON-15, inclusive).
- 8.2 Exhibits to the Agreement (pages N/A to N/A, inclusive).
- 8.3 Performance and other Bonds (pages PPB-1 to PPB-4, inclusive).
- 8.4 General Conditions (pages GC-1 to GC-29, inclusive).

- 8.5 Supplementary Conditions (pages SC-1 to SC-26 , inclusive).
- 8.6 Specifications bearing the title Technical Specifications and consisting of 18 sections, as listed in table of contents thereof.
- 8.7 Drawings, consisting of _____ sheets bearing the following general title:
- Contract No. 3 - Bill Hall Branch Water Line Extension
Beaver Elkhorn Water District, Floyd County, Kentucky
- 8.8 Addenda number N/A to N/A , inclusive.
- 8.9 CONTRACTOR's Bid (Page P-13).
- 8.10 Documentation submitted by CONTRACTOR prior to Notice of Award (pages P-17 to P-24 , inclusive).
- 8.11 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.
- 8.12 The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions.

Article 9. MISCELLANEOUS

- 9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, 19 99.

OWNER

CONTRACTOR

By _____
(CORPORATE SEAL)

By _____
(CORPORATE SEAL)

Attest _____

Attest _____

Address for Giving Notices

Address for Giving Notices

(If OWNER is a public body attach evidence of authority to sign and resolution or other documents authorizing execution

License No. _____

Agent for Service of Process:

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)

SECTION FIVE

PERFORMANCE AND PAYMENT BONDS

<u>ARTICLE</u>	<u>CONTENTS</u>	<u>PAGE</u>
1	Construction Performance Bond.....	PPB-1
2	Construction Payment Bond.....	PPB-3

Construction Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

Beaver Elkhorn Water District
 96 Kentucky Route 3188
 Martin, Kentucky 41649

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

Contract No. _____
 Bill Hall Branch Water Line Extension Project
 Beaver Elkhorn Water District
 Floyd County, Kentucky

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1. The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

3.3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

4.2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

2. Deny liability in whole or in part, and notify the Owner citing reasons therefor.

5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2. Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1. Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

Construction Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

Beaver Elkhorn Water District
 96 Kentucky Route 3188
 Martin, Kentucky 41649

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

Contract No. _____
 Bill Hall Branch Water Line Extension Project
 Beaver Elkhorn Water District
 Floyd County, Kentucky

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

SURETY

Company: _____ (Corp. Seal)

Signature: _____
 Name and Title:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

With respect to the Owner, this obligation shall be null and void if the Contractor:

- 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2. Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
- 4.1. Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2. Claimants who do not have a direct contract with the Contractor:
 1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
- 6.1. Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2. Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract

and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

SECTION SIX
GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE I—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement—The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds—Bid, performance and payment bonds and other instruments of security.

Change Order—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price—The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time—The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR—The person, firm or corporation with whom OWNER has entered into the Agreement.

defective—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Drawings—The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER—The person, firm or corporation named as such in the Agreement.

Field Order—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements—Sections of Division I of the Specifications.

Laws and Regulations; Laws or Regulations—Laws, rules, regulations, ordinances, codes and/or orders.

Notice of Award—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

Notice to Proceed—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

OWNER—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization—Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

Project—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Resident Project Representative—The authorized representative of ENGINEER who is assigned to the site or any part thereof.

Shop Drawings—All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

Supplementary Conditions—The part of the Contract Documents which amends or supplements these General Conditions.

Supplier—A manufacturer, fabricator, supplier, distributor, materialman or vendor.

Underground Facilities—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work—Work to be paid for on the basis of unit prices.

Work—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER,

ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly Work-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time; Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. ~~In no event will the Contract Time commence to run later than the seventy-fifth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.~~

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown

Engineer and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.6.2. a preliminary schedule of Shop Drawing submissions; and

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission.

~~* 2.7. Before any Work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7.~~

Preconstruction Conference:

2.8. Within twenty days after the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6, to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish a working understanding among the parties as to the Work.

Finalizing Schedules:

At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to finalize the schedules submitted in accordance with para-

graph 2.6. The finalized progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on ENGINEER responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility therefor. The finalized schedule of Shop Drawing submissions will be acceptable to ENGINEER as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3. If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to ENGINEER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification

from ENGINEER; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.4. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.4.1. a formal Written Amendment,

3.4.2. a Change Order (pursuant to paragraph 10.4),
or

3.4.3. a Work Directive Change (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

3.5. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.5.1. a Field Order (pursuant to paragraph 9.5),

3.5.2. ENGINEER's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27), or

3.5.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and

*Superseded, See SC-4.2.1

**Clarified, See SC-4.2.2

such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER's furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions:

~~* 4.2.1. *Explorations and Reports:* Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.~~

** 4.2.2. *Existing Structures:* Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. *Report of Differing Conditions:* If CONTRACTOR believes that:

4.2.3.1. any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2. any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.22), notify OWNER and ENGINEER in writing about the inaccuracy or difference.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Document Change:* If ENGINEER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. *Possible Price and Time Adjustments:* In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions—Underground Facilities:

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2. *Not Shown or Indicated.* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility to

determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of. If the parties are unable to agree as to the amount or length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5—BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of

the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days hereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance:

* 5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.3.1. Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason;

5.3.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;

5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least

* Clarified, Limits Established, See SC-5.3.

** Limits Established, See SC-5.4.

*** Deleted

thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

Contractual Liability Insurance:

** 5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31.

Owner's Liability Insurance:

~~*** 5.5. OWNER shall be responsible for purchasing and maintaining OWNER's own liability insurance and, at OWNER's option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.~~

Property Insurance:

~~**** 5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER and ENGINEER's consultants in the Work, all of whom shall be listed as insureds or additional insured parties, shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.~~

~~***** 5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER AND ENGINEER's consultants in the Work, all of whom shall be listed as insured or additional insured parties.~~

**** Superseded, See SC-5.6.

***** Superseded. See SC-5.7.

~~* 5.8. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to CONTRACTOR by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.~~

~~** 5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are provided in the Supplementary Conditions. The risk of loss within the deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.~~

~~*** 5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policy, OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.~~

Waiver of Rights:

5.11.1. OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and 5.7 and any other property insurance applicable to the Work, and also waive all such rights against the Subcontractors, ENGINEER, ENGINEER's consultants and all other parties named as insureds in such policies for losses and damages so caused. As required by paragraph 6.11, each subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER's consultants and all other parties named as insureds. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 and 5.7 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER's consultant OWNER will obtain the same, and if

* Superseded, See SC-5.8.

** Superseded, See SC-5.9.

such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

Receipt and Application of Proceeds:

~~*** 5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.~~

~~*** 5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of such duties.~~

Acceptance of Insurance:

~~**** 5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with paragraphs 5.3 and 5.4 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7. If CONTRACTOR has any objection to the coverage afforded by or other provisions of the policies of insurance required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 on the basis of their not complying with the Contract Documents, CONTRACTOR shall notify OWNER in writing thereof within ten days of the date of delivery of such certificates to CONTRACTOR in accordance with paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided by each as the other may reasonably request. Failure by OWNER or CONTRACTOR to give any such notice of objection within the time provided shall constitute acceptance of such insurance purchased by the other as complying with the Contract Documents.~~

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no

*** Deleted

**** Superseded, See SC-5.14.

such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

*6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

* See Special Provisions of Technical Specifications.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

Adjusting Progress Schedule:

6.6. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "Or-Equal" Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by ENGINEER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or

royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to ENGINEER, if CONTRACTOR submits sufficient information to allow ENGINEER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in paragraph 6.7.1 as applied by ENGINEER and as may be supplemented in the General Requirements.

6.7.3. ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. ENGINEER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. ENGINEER will record time required by ENGINEER and ENGINEER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

~~6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by~~

* Superseded, See SC-6.8.2.

~~OWNER and ENGINEER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.~~

6.9. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER

or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the

place of the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto; resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extent based on a claim arising out of CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon com-

pletion of the Work, these record documents, samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons and organizations who may be affected thereby;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

Shop Drawings and Samples:

6.23. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable ENGINEER to review the information as required.

6.24. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on

each Shop Drawing submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve with reasonable promptness Shop Drawings and samples, but ENGINEER's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.2 and ENGINEER has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

6.28. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to ENGINEER's review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work,

provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or employees by any employee of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, ENGINEER's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CON-

TRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR's failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

~~* 7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.~~

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to arbitration.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing struc-

tures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

~~* 8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.8.~~

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

Project Representation:

** 9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent OWNER at the site who is not ENGINEER's agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Supplementary Conditions.

* Deleted

** See SC-9.3.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the Work involved promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be *defective*, and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8. In connection with ENGINEER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with ENGINEER's responsibilities in respect of Applications for Payment, etc., see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decisions thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other party to the Agreement and

to ENGINEER written notice of intention to appeal from such a decision.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Time will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.13. Neither ENGINEER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Sub-contractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be

effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. ENGINEER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. changes in the Work which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 13.14, or are agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Time which are agreed to by the parties; and

* Paragraph Added, See SC-10.6.

10.4.3. changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

*

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1. through 11.9.3, inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraphs 11.6 and 11.7).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject

to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage

requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.9.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4— all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR's Fee:

11.6. The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's Fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

11.6.2.3. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.4. the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.4, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to ENGINEER. CONTRACTOR agrees that:

11.8.1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the

allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with Paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

~~* 11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.~~

ARTICLE 12—CHANGE OF CONTRACT TIME

12.1. The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant is reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time

* Superseded, See SC-11.9.3.

shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

ARTICLE 13—WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1. CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all Work will be in accordance with the Contract Documents and will not be *defective*. Prompt notice of all defects shall be given to CONTRACTOR. All *defective* Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also

be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's or ENGINEER's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent

thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with *nondefective* Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with *nondefective* Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential

costs attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by ENGINEER, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

* Paragraph Added, See SC-14.2.1.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

*

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a

representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of ENGINEER's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. of ENGINEER's actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling

OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Docu-

ments, or which OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and useable part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at any time request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to ENGINEER and within a reasonable time thereafter OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER and ENGINEER that such part of the Work is not ready for separate operation by OWNER, ENGINEER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing and so informed ENGINEER). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or *defective*. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents—all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation—all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.16.

Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13, nor any correction of *defective* Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from *defective* Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of

CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

Owner May Suspend Work:

15.1. OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4. if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors;

15.2.5. if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents

(including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time);

15.2.7. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.8. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.9. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by ENGINEER and incorporated in a Change Order, but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and ENGINEER stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16—ARBITRATION

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding on OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the

American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's agents, employees or consultants) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration,

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C. §§10,11).

ARTICLE 16 DELETED IN ITS ENTIRETY

ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omis-

sion or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

SECTION SEVEN

SUPPLEMENTARY CONDITIONS

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SECTION SEVEN**SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The articles and paragraphs of these Supplementary Conditions are arranged in the same order as the General Conditions in order to facilitate understanding of the amendments and supplements made.

ARTICLE 1 - DEFINITIONS

SC-1 - Definitions

The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.1 - Delivery of Bonds:

No change.

SC-2.2 - Copies of Documents:

No change.

SC-2.3 - Commencement of Contract Time; Notice to Proceed:

Delete last sentence of paragraph.

SC-2.4 - Starting the Project:

No change.

SC-2.5 - Before Starting Construction:

No change.

SC-2.6 - Before Starting Construction:

No change.

SC-2.7 - Before Starting Construction:

Delete Paragraph 2.7 of the General Conditions in its entirety and insert the following in its place:

Before any Work at the site is started, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with Paragraphs 5.3, 5.4, 5.6, and 5.7. No Work may be performed until the OWNER has accepted the CONTRACTOR'S insurance (See Also SC-5.14).

SC-2.8 - Preconstruction Conference:

No change.

SC-2.9 - Finalizing Schedules:

No change.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.1 - Intent:

No change.

SC-3.2 - Intent:

No change.

SC-3.3 - Intent:

No change.

SC-3.4 - Amending and Supplementing:

No change.

SC-3.5 - Amending and Supplementing:

No change.

SC-3.6 - Reuse:

No change.

**ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS;
REFERENCE POINTS**

SC-4.1 - Availability of Lands:

No change.

SC-4.2.1 - Explorations and Reports:

Delete Paragraph 4.2.1 of the General Conditions in its entirety and insert the following in its place:

The CONTRACTOR will be responsible to make or obtain such explorations, tests and data concerning physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site which CONTRACTOR deems necessary for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents. Except as indicated in Paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

SC-4.2.2 - Existing Structures:

The following drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the site of the Work:

None

SC-4.3 - Physical Conditions - Underground Facilities:

No change.

SC-4.4 - Reference Points:

No change.

ARTICLE 5 - BONDS AND INSURANCE

SC-5.1 - Performance and Other Bonds:

No change.

SC-5.2 - Performance and Other Bonds:

No change.

SC-5.3 - Contractor's Liability Insurance:

The limits of liability for the insurance required by Paragraph 5.3 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

5.3.1 and 5.3.2 Worker's Compensation, etc. under Paragraphs 5.3.1 and 5.3.2 of the General Conditions:

- | | | |
|----|--|--------------|
| 1) | State: | Statutory |
| 2) | Applicable Federal
(e.g. Longshoreman's): | Statutory |
| 3) | Employer's Liability: | \$500,000.00 |

5.3.3, 5.3.4, 5.3.5 and 5.3.6 Comprehensive General Liability (under Paragraphs 5.3.3 through 5.3.6 of the General Conditions):

- 1) Bodily Injury (including completed operations and products liability):

\$1,000,000.00	Each Occurrence
\$2,000,000.00	Annual Aggregate

Property Damage:	
\$1,000,000.00	Each Occurrence
\$2,000,000.00	Annual Aggregate

or a combined single limit of \$ N/A

- 2) Property Damage liability insurance will provide Explosion, Collapse and Underground coverage where applicable.
- 3) Personal Injury, with employment exclusion deleted:

\$1,000,000.00	Annual Aggregate
----------------	------------------

5.3.7 Comprehensive Automobile Liability:

Bodily Injury:	
\$1,000,000.00	Each Person
\$2,000,000.00	Each Occurrence

Property Damage:	
\$1,000,000.00	Each Occurrence

or a combined single limit of \$ N/A

5.3.8 Railroad Protective Insurance:

Railroad Protective Insurance is not required.

5.3.9 Additional liability coverage for OWNER and ENGINEER will be provided by endorsement as additional insureds on CONTRACTORS' General Liability Policy.

SC.5.4 - Contractual Liability Insurance:

The Contractual Liability required by Paragraph 5.4 of the General conditions shall provide coverage for not less than the following amounts:

Bodily Injury:	
\$1,000,000.00	Each Person
Property Damage:	
\$1,000,000.00	Each Occurrence
\$1,000,000.00	Annual Aggregate

SC-5.5 - OWNER'S Liability Insurance:

Delete Paragraph 5.5 of the General Conditions in its entirety.

SC-5.6 - Property Insurance:

Delete Paragraph 5.6 of the General Conditions in its entirety and insert the following in its place:

5.6 CONTRACTOR shall purchase and maintain until final payment property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in these Supplementary Conditions or required by Laws and Regulations). The insurance shall include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, and ENGINEER'S consultants in the Work (all of whom shall be listed as insured or additional insured parties), shall insure against the perils of fire and extended coverage, shall include "all-risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in these Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all-risk" insurance or otherwise provided in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this Paragraph 5.6 shall comply with the requirements of GC-5.8.

SC-5.7 - Property Insurance:

Delete Paragraph 5.7 of the General Conditions in its entirety and insert the following in its place:

5.7 CONTRACTOR shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, and ENGINEER'S consultants in the Work, all of whom shall be listed as insured or additional insured parties.

SC-5.8 - Property Insurance:

Delete Paragraph 5.8 of the General Conditions in its entirety and insert the following in its place:

5.8 All policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained by CONTRACTOR in accordance with Paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to OWNER by certified mail and will contain waiver provisions in accordance with Paragraph 5.11.2.

SC-5.9 - Property Insurance:

Delete Paragraph 5.9 of the General Conditions in its entirety and insert the following in its place:

5.9 The risk of loss within the deductible amount for property insurance will be borne by the CONTRACTOR.

SC-5.10 - Property Insurance:

Delete Paragraph 5.10 of the General Conditions in its entirety.

SC-5.11 - Waiver of Rights:

No change.

SC-5.12 - Receipt and Application of Proceeds:

Delete Paragraph 5.12 of the General Conditions in its entirety.

SC-5.13 - Receipt and Application of Proceeds:

Delete Paragraph 5.13 of the General Conditions in its entirety.

SC-5.14 - Acceptance of Insurance:

Delete Paragraph 5.14 of the General Conditions in its entirety and insert the following in its place:

5.14 If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with Paragraphs 5.3, 5.4, 5.5, 5.6 and 5.7 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of delivery of such certificates to OWNER in accordance with Paragraph 2.7. CONTRACTOR shall provide OWNER such additional information in respect of insurance provided as OWNER may reasonably request. Failure by OWNER to give any notice of objection within the time provided shall constitute acceptance of such insurance purchased by the CONTRACTOR as complying with the Contract Document.

SC-5.15 - Partial Utilization - Property Insurance:

No change.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC-6.1 - Supervision and Superintendence:

No change.

SC-6.2 - Supervision and Superintendence:

No change.

SC-6.3 - Labor, Materials, Equipment:

No change.

SC-6.4 - Labor, Materials, Equipment:

No change.

SC-6.5 - Labor, Materials, Equipment:

No change.

SC-6.6 - Adjusting Progress Schedule:

No change.

SC-6.7 - Substitutes or "Or Equal" Items:

No change.

SC-6.8.1 - Concerning Subcontractors, Suppliers and Others:

No change.

SC-6.8.2 - Concerning Subcontractor, Suppliers and Others:

Delete Paragraph 6.8.2 of the General Conditions in its entirety and insert the following in its place:

6.8.2 The CONTRACTOR shall submit the names of the Subcontractors, Suppliers, or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to the OWNER within seven days of the bid opening for acceptance by OWNER and ENGINEER. If CONTRACTOR submits a list in accordance with these requirements, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitute and an appropriate Change Order will be issued or Written Amendment signed.

SC-6.9 - Concerning Subcontractors, Suppliers, and Other:

No change.

SC-6.10 - Concerning Subcontractors, Suppliers, and Others:

No change.

SC-6.11 - Concerning Subcontractors, Suppliers, and Others:

No change.

SC-6.12 - Patent Fees and Royalties:

No change.

SC-6.13 - Permits

No change.

SC-6.14.1 - Laws and Regulations:

No change.

SC-6.14.2 - Laws and Regulations:

No change.

SC-6.15 - Taxes:

No change.

SC-6.16 - Use of Premises:

No change.

SC-6.17 - Use of Premises:

No change.

SC-6.18 - Use of Premises:

No change.

SC-6.19 - Record Documents:

No change.

SC-6.20 - Safety and Protection:

No change.

SC-6.21 - Safety and Protection:

No change.

SC-6.22 - Emergencies:

No change.

SC-6.23 - Shop Drawings and Samples:

No change.

SC-6.24 - Shop Drawing and Samples:

No change.

SC-6.25 - Shop Drawings and Samples:

No change.

SC-6.26 - Shop Drawings and Samples:

No change.

SC-6.27 - Shop Drawings and Samples:

No change.

SC-6.28 - Shop Drawings and Samples:

No change.

SC-6.29 - Continuing the Work:

No change.

SC-6.30 - Indemnification:

No change.

SC-6.31 - Indemnification:

No change.

SC-6.32 - Indemnification:

No change.

ARTICLE 7 - OTHER WORK

SC-7.1 - Related Work at Site:

No change.

SC-7.2 - Related Work at Site:

No change.

SC-7.3 - Related Work at Site:

No change.

SC-7.4 - Coordination:

Delete Paragraph 7.4 of the General Conditions in its entirety.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

SC-8.1 - OWNER'S Responsibilities:

No change.

SC-8.2 - OWNER'S Responsibilities:

No change.

SC-8.3 - OWNER'S Responsibilities:

No change.

SC-8.4 - OWNER'S Responsibilities:

No change.

SC-8.5 - OWNER'S Responsibilities:

Delete Paragraph 8.5 of the General Conditions in its entirety.

SC-8.6 - OWNER'S Responsibilities:

No change.

SC-8.7 - OWNER'S Responsibilities:

No change.

SC-8.8 - OWNER'S Responsibilities:

No change.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

SC-9.1 - OWNER'S Representative:

No change.

SC-9.2 - Visits to Site:

No change.

SC-9.3 - Project Representation:

The duties, responsibilities and limitations of authority of the Resident Project Representative are outlined in Attachment "A" to these Supplementary Conditions.

SC-9.4 - Clarifications and Interpretations:

No change.

SC-9.5 - Authorized Variations in Work:

No change.

SC-9.6 - Rejecting Defective Work:

No change.

SC-9.7 - Shop Drawings:

No change.

SC-9.8 - Change Orders:

No change.

SC-9.9 - Payments:

No change.

SC-9.10 - Determinations for Unit Prices:

No change.

SC-9.11 - Decisions on Disputes:

No change.

SC-9.12 - Decisions of Disputes:

No change.

SC-9.13 - Limitations on ENGINEER'S Responsibilities:

No change.

SC-9.14 - Limitations on ENGINEER'S Responsibilities:

No change.

SC-9.15 - Limitations on ENGINEER'S Responsibilities:

No change.

SC-9.16 - Limitations on ENGINEER'S Responsibilities:

No change.

ARTICLE 10 - CHANGES IN THE WORK

SC-10.1 - Changes in the Work:

No change.

SC-10.2 - Changes in the Work:

No change.

SC-10.3 - Changes in the Work:

No change.

SC-10.4 - Changes in the Work:

No change.

SC-10.5 - Changes in the Work:

No change.

SC-10.6 - Changes in the Work:

Add a new paragraph immediately after Paragraph 10.5 of the General Conditions which is to read as follows:

10.6 The form of a Change Order will be as provided in Attachment "B" to these Supplementary Conditions. The form of a Work Directive Change will be as provided in Attachment "C" of these Supplementary Conditions.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

SC-11.1 - Change of Contract Price:

No change.

SC-11.2 - Change of Contract Price:

Delete Paragraph 11.2 of the General Conditions in its entirety and insert the following in its place:

The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than fourteen days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within thirty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph 11.2.

No change.

SC-11.3 - Change of Contract Price:

No change.

SC-11.4 - Cost of the Work:

No change.

SC-11.5 - Cost of the Work:

No change.

SC-11.6 - CONTRACTOR'S Fee:

No change.

SC-11.7 - CONTRACTOR'S Fee:

No change.

SC-11.8 - Cash Allowances:

No change.

SC-11.9.1 - Unit Price Work:

No change.

SC-11.9.2 - Unit Price Work:

No change.

SC-11.9.3 -

Paragraph 11.9.3 of the General Conditions is hereby deleted in its entirety and the following is substituted in its place:

The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

11.9.3.1 If the total cost of a particular item of Unit Price Work amounts to 10% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by CONTRACTOR differs by more than 40% from the established quantity of such item indicated in the Agreement; and,

11.9.3.2 If there is no corresponding adjustment with respect to any other item of Work; and,

11.9.3.3 If CONTRACTOR believes that it has incurred additional expense as a result thereof; or,

11.9.3.4 If OWNER believes that the quantity variation entitles it to an adjustment in the unit price, either OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the effect of any such variation in the quantity of Unit Price Work performed.

ARTICLE 12 - CHANGE OF CONTRACT TIME

SC-12.1 - Change of Contract Time:

Delete Paragraph 12.1 of the General Conditions in its entirety and insert the following in its place:

The Contract Time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party

making the claim to the other party and to ENGINEER promptly (but in no event later than fourteen days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within thirty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph.

No change.

SC-12.2 - Change of Contract Time:

No change.

SC-12.3 - Change of Contract Time:

No change.

**ARTICLE 13 - WARRANTY GUARANTEE, TESTS AND INSPECTIONS; CORRECTION,
REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

SC-13.1 - Warranty and Guarantee:

No change.

SC-13.2 - Access to Work:

No change.

SC-13.3 - Tests and Inspections:

No change.

SC-13.4 - Tests and Inspections:

No change.

SC-13.5 - Tests and Inspections:

No change.

SC-13.6 - Tests and Inspections:

No change.

SC-13.7 - Tests and Inspections:

No change.

SC-13.8 - Uncovering Work:

No change.

SC-13.9 - Uncovering Work:

No change.

SC-13.10 - OWNER May Stop the Work:

No change.

SC-13.11 - Correction or Removal of Defective Work:

No change.

SC-13.12 - One Year Correction Period:

No change.

SC-13.13 - Acceptance of Defective Work:

No change.

SC-13.14 - OWNER May Correct Defective Work:

No change.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

SC-14.1 - Schedule of Values:

No change.

SC-14.2 - Application for Progress Payment:

No change.

SC-14.2.1 - Application for Progress Payment:

Add a new paragraph immediately after Paragraph 14.2 of the General Conditions which is to read as follows:

14.2.1 The form used for an Application for Payment shall be as provided in Attachment "D" to these Supplementary Conditions.

SC-14.3 - CONTRACTOR's Warranty of Title:

No change.

SC-14.4 - Review of Applications for Progress Payment:

No change.

SC-14.5 - Review of Applications for Progress Payment:

No change.

SC-14.6 - Review of Applications for Progress Payment:

No change.

SC-14.7 - Review of Applications for Progress Payment:

No change.

SC-14.8 - Substantial Completion:

No change.

SC-14.9 - Substantial Completion:

No change.

SC-14.10 - Partial Utilization:

No change.

SC-14.11 - Final Inspection:

No change.

SC-14.12 - Final Application for Payment:

No change.

SC-14.13 - Final Payment and Acceptance:

No change.

SC-14.14 - Final Payment and Acceptance:

No change.

SC-14.15 - CONTRACTOR'S Continuing Obligation:

No change.

SC-14.16 - Waiver of Claims:

No change.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC-15.1 - OWNER May Suspend Work:

No change.

SC-15.2 - OWNER May Terminate:

No change.

SC-15.3 - OWNER May Terminate:

No change.

SC-15.4 - OWNER May Terminate:

No change.

SC-15.5 - CONTRACTOR May Stop Work or Terminate:

No change.

ARTICLE 16 - ARBITRATION

Article 16 is deleted in its entirety.

ARTICLE 17 - MISCELLANEOUS

SC-17.1 - Giving Notice:

No change.

SC-17.2 - Computation of Time:

No change.

SC-17.3 - General:

No change.

SC-17.4 - General:

No change.

**A LISTING OF THE DUTIES, RESPONSIBILITIES AND
LIMITATIONS OF AUTHORITY OF THE RESIDENT PROJECT REPRESENTATIVE.**

Adaptation to the peculiarities and
requirements of each Project is essential.

ENGINEER shall furnish a Resident Project Representative (RPR), assistants and other field staff to assist ENGINEER in observing performance of the Work of the Contractor.

Through more extensive on-site observations of the Work in progress and field checks of materials and equipment by the RPR and assistants, ENGINEER shall endeavor to provide further protection for OWNER against defects and deficiencies in the Work; but, the furnishing of such services will not make ENGINEER responsible for or give ENGINEER control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs, or responsibility for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

The duties and responsibilities of the RPR are limited to those of ENGINEER in ENGINEER's agreement with the OWNER and in the construction Contract Documents, and are further limited and described as follows:

A. General

RPR is ENGINEER's agent at the site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding RPR's actions. RPR's dealings in matters pertaining to the on-site work shall in general be with ENGINEER and CONTRACTOR keeping OWNER advised as necessary. RPR's dealings with sub-contractors shall only be through or with the full knowledge and approval of CONTRACTOR. RPR shall generally communicate with OWNER with the knowledge of and under the direction of ENGINEER.

B. Duties and Responsibilities of RPR

1. *Schedules*: Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by CONTRACTOR and consult with ENGINEER concerning acceptability.
2. *Conferences and Meetings*: Attend meetings with CONTRACTOR, such as pre-construction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
3. *Liaison*:
 - a. Serve as ENGINEER's liaison with CONTRACTOR, working principally through CONTRACTOR's superintendent and assist in understanding the intent of the Contract Documents; and assist ENGINEER in serving as OWNER's liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-site operations.
 - b. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.
4. *Shop Drawings and Samples*:
 - a. Record date of receipt of Shop Drawings and samples.
 - b. Receive samples which are furnished at the site by CONTRACTOR, and notify ENGINEER of availability of samples for examination.

- c. Advise ENGINEER and CONTRACTOR of the commencement of any Work requiring a Shop Drawing or sample if the submittal has not been approved by ENGINEER.
5. *Review of Work, Rejection of Defective Work, Inspections and Tests:*
 - a. Conduct on-site observations of the Work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to ENGINEER whenever RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that CONTRACTOR maintains adequate records thereof; and observe, record and report to ENGINEER appropriate details relative to the test procedures and startups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to ENGINEER.
 6. *Interpretation of Contract Documents:* Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed and transmit to CONTRACTOR clarifications and interpretations as issued by ENGINEER.
 7. *Modifications:* Consider and evaluate CONTRACTOR's suggestions for modifications in Drawings or Specifications and report with RPR's recommendations to ENGINEER. Transmit to CONTRACTOR decisions as issued by ENGINEER.
 8. *Records:*
 - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
 - b. Keep a diary or log book, recording CONTRACTOR hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to ENGINEER.
 - c. Record names, addresses and telephone numbers of all CONTRACTORS, subcontractors and major suppliers of materials and equipment.
 9. *Reports:*
 - a. Furnish ENGINEER periodic reports as required of progress of the Work and of CONTRACTOR's compliance with the progress schedule and schedule of Shop Drawing and sample submittals.
 - b. Consult with ENGINEER in advance of scheduled major tests, inspections or start of important phases of the Work.

- c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from CONTRACTOR and recommend to ENGINEER Change Orders, Work Directive Changes, and Field Orders.
 - d. Report immediately to ENGINEER and OWNER upon the occurrence of any accident.
10. *Payment Requests*: Review applications for payment with CONTRACTOR for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the schedule of values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.
11. *Certificates, Maintenance and Operation Manuals*: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by CONTRACTOR are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to ENGINEER for review and forwarding to OWNER prior to final payment for the Work.
12. *Completion*:
 - a. Before ENGINEER issues a Certificate of Substantial Completion, submit to CONTRACTOR a list of observed items requiring completion or correction.
 - b. Conduct final inspection in the company of ENGINEER, OWNER and CONTRACTOR and prepare a final list of items to be completed or corrected.
 - c. Observe that all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance.

C. Limitations of Authority

Resident Project Representative:

1. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by ENGINEER.
2. Shall not exceed limitations of ENGINEER's authority as set forth in the Contract Documents.
3. Shall not undertake any of the responsibilities of CONTRACTOR, subcontractors or CONTRACTOR's superintendent.
4. Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
5. Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.
6. Shall not accept Shop Drawing or sample submittals from anyone other than Contractor.
7. Shall not authorize OWNER to occupy the Project in whole or in part.
8. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by ENGINEER.

ATTACHMENT 'B'
CHANGE ORDER
NO. _____

PROJECT: Contract No. _____ DATE OF ISSUANCE: _____
Bill Hall Branch Water Line Extension

OWNER: Beaver Elkhorn Water District
96 Kentucky Route 3188
Martin, Kentucky 41649

CONTRACTOR: _____

ENGINEER: Summit Engineering, Inc.

You are directed to make the following changes in the Contract Documents:

DESCRIPTION:
1.

PURPOSE
1.

ATTACHMENTS
1.

CHANGE IN CONTRACT PRICE:
Original Price: \$ _____
THIS CHANGE ORDER: \$ _____
Total Previous \$ _____
Changes __ to __

CHANGE IN CONTRACT TIME:
Original Time: _____ Days
THIS CHANGE ORDER: 0 Days
Total Previous _____ Days
Changes __ to __

Current Price \$ _____

Current Time: _____ Days

RECOMMENDED:
By _____
Engineer

APPROVED:
By _____
Owner

APPROVED:
By _____
Contractor

WORK DIRECTIVE CHANGE

(Instructions on reverse side)

No. _____

PROJECT:

DATE OF ISSUANCE:

OWNER:
(Name,Address)

OWNER'S PROJECT NO. _____

ENGINEER:

CONTRACTOR:

CONTRACT FOR:

ENGINEER'S PROJECT NO. _____

You Are directed to proceed promptly with the following change(s):

Description:

Purpose of Work Directive Change:

Attachments: (List documents supporting change)

If a claim is made that the above change(s) have affected Contract Price or Contract time, any claim for a Change Order based thereon will invoice one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

 Time and Materials Unit Prices Cost Plus Fixed Fee Other _____

Method of determining change in Contract Time:

 Contractor's records Engineer's Records Other _____

Estimated increase(decrease) in Contract Price:

\$ _____

Estimated increase(decrease) in Contract Time:

_____ days.

If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

If the change involves an increase, the estimated time is not to be exceeded without further authorization.

RECOMMENDED:

BY: _____
Engineer

AUTHORIZED:

By: _____
Owner

Project: Contract 1 - Bill Hall Branch Water Line Extension

Engineer: Summit Engineering, Inc.

Contractor Meeting Schedule: Yes

Estimate No 1

For Period: 7/7/99 to 7/7/99

Perct Complete #DIV/0!

Contract Completion Date: Fall, 1999

Item No.	Item Description	Bid Quantity	Unit	Purchase Price	Purchase Amount	Purchase Quantity	Quantity Used	Quantity On Hand	Total Stored Materials
1	GENERAL								
1a	None								
2	CONNECTIONS	1	EA	\$0.00	\$0.00		0	0	\$0.00
2a	Connect to Existing 6" Water Line								
3	WATER LINE	90	LF	\$0.00	\$0.00	0	0	0	\$0.00
3a	4" D.I. Water Line, CL 350, PJ								
3b	4" PVC Water Line, SDR 17	11,940	LF	\$0.00	\$0.00	0	0	0	\$0.00
4	VALVES	11	EA	\$0.00	\$0.00	0	0	0	\$0.00
4a	4" Resilient Wedge Gate Valve, M.J. 150 psi								
4b	Air Relief	1	EA	\$0.00	\$0.00	0	0	0	\$0.00
5	FITTINGS								
5a	4"x4"x4" Compact DI Tee, MJ	5	EA	\$0.00	\$0.00	0	0	0	\$0.00
5b	4"x4"x3" Compact DI Tee, MJ	4	EA	\$0.00	\$0.00	0	0	0	\$0.00
5c	6"x4" Reducer	1	EA	\$0.00	\$0.00	0	0	0	\$0.00
6	ENCASEMENTS								
6a	Bore and Encase for 4" Water Line	146	LF	\$0.00	\$0.00	0	0	0	\$0.00
6b	Open Cut - Encase for 4" Water Line	18	LF	\$0.00	\$0.00	0	0	0	\$0.00
7	SERVICE CONNECTIONS								
7a	5/8" x 3/4" Water Meter Set with PRV	42	EA	\$0.00	\$0.00	0	0	0	\$0.00
7b	3/4" HDPE Service Line - SDR 9.3	1,340	LF	\$0.00	\$0.00	0	0	0	\$0.00
8	HYDRANTS								
8a	Blow-Off with Valve	4	EA	\$0.00	\$0.00	0	0	0	\$0.00
9	SURFACE REPLACEMENT (FOR MAIN LINE ONLY)								
9a	None								
10	PUMPS, STORAGE, AND PRV'S								
10b	20,000 Gal Skid Tank	1							\$0.00
						Total Materials Stored			\$0.00
						Sales Tax (@ 6%)			0.00
						Total Materials & Tax			\$0.00

SOME CONSTRUCTION COMPANY
ANYWHERE, KENTUCKY

PERIODIC ESTIMATE PARTIAL PAYMENT
Owner: Beaver Creek Water District
Engineer: Summit Engineering, Inc.

SHEET 2 OF 3
ATTACHMENT B

Project: Contract 2 - Freeburn Majestic (AML)
Estimate No 1
Contract Completion Date: Fall, 1999

For Period: 7/7/99 to 7/7/99
Perct Complete #DIV/0!
Contractor Meeting Schedule: Yes

CONTRACT ESTIMATE				PAY QUANTITIES					
Item No.	Item Description	Bid Quantity	Unit	Unit Price	Amount	Previous Estimate	Current Estimate	Total To Date	Total Amount
5	FITTINGS								
5a	4"x4"x4" Compact DI Tee, MJ	5	EA	\$0.00	\$0.00	0	0	0	0.00
5b	4"x4"x3" Compact DI Tee, MJ	4	EA	\$0.00	\$0.00	0	0	0	0.00
5c	6"x4" Reducer	1	EA	\$0.00	\$0.00	0	0	0	0.00
6	ENCASEMENTS								
6a	Bore and Encase for 4" Water Line	146	LF	\$0.00	\$0.00	0	0	0	0.00
6b	Open Cut - Encase for 4" Water Line	18	LF	\$0.00	\$0.00	0	0	0	0.00
7	SERVICE CONNECTIONS								
7a	5/8" x 3/4" Water Meter Set with PRV	42	EA	\$0.00	\$0.00	0	0	0	0.00
7b	3/4" HDPE Service Line - SDR 9.3	1,340	LF	\$0.00	\$0.00	0	0	0	0.00
8	HYDRANTS								
8a	Blow-Off with Valve	4	EA	\$0.00	\$0.00	0	0	0	0.00
9	SURFACE REPLACEMENT (FOR MAIN LINE ONLY)								
9a	Bituminous Pavement Replacement w/o Concrete	50	LF	\$0.00	\$0.00	0	0	0	0.00
9b	Concrete Pavement Replacement	50	LF	\$0.00	\$0.00	0	0	0	0.00
10	PUMPS, STORAGE, AND PRV's								
10b	20,000 Gal. Skid Tank complete, in-place	1	LS	\$0.00	\$0.00	0.00	0.00	0.00	0.00
	Change Order No. 1								
	Change Order No. 2 -								
	Change Order No. 3								
TOTAL CONTRACT						\$0.00			
TOTAL WORK TO DATE									\$0.00

Estimate No 1
Contract Completion Date: Fall, 1999

For Period: 7/7/99 to 7/7/99
Perct Complete: #DIV/0!

Contractor Meeting Schedule: Yes

CONTRACT ESTIMATE				PAY QUANTITIES				
Item No.	Item Description	Bid Quantity	Unit Price	Amount	Previous Estimate	Current Estimate	Total To Date	Total Amount
1	GENERAL							
1a	Mobilization/DeMobilization (See Note 2)	1	\$0.00	\$0.00	0.00	0.00	0.00	0.00
1b	Seeding	1	\$0.00	\$0.00	0	0.00	0.00	0.00
1c	Special Pipe Bedding (See Note 3)	100	\$0.00	\$0.00	0	0	0	0.00
2	CONNECTIONS							
2a	Connect to Existing 6" Water Line	1	\$0.00	\$0.00	0	0	0	0.00
3	WATER LINE							
3a	4" D.I. Water Line, CL 350, PJ	90	\$0.00	\$0.00	0	0	0	0.00
3b	4" PVC Water Line, SDR 17	11,940	\$0.00	\$0.00	0	0	0	0.00
4	VALVES							
4c	4" Resilient Wedge Gate Valve, MJ, 150 psi	11	\$0.00	\$0.00	0	0	0	0.00
4d	Air Relief	1	\$0.00	\$0.00	0	0	0	0.00

SUMMARY OF ALL ESTIMATES

Est. 1 \$
Est. 2 \$
Est. 3 \$

Est. No. 7 \$
Est. No. 8 \$
Est. No. 9 \$

Est. No. 10 \$
Est. No. 11 \$
Est. No. 12 \$

CONTRACTOR'S CERTIFICATION:

I, the undersigned Contractor certifies that to the best of their knowledge, information and belief the work covered by this payment estimate has been completed in accordance with the contract documents, that all amounts have been paid by the contractor for work for which previous payment estimates were issued and payments received from the Owner, and that current payment shown herein is now due.

SOME CONSTRUCTION, INC. By: _____ Date: _____

SUMMARY

Total Work to Date \$0.00
 Stored Materials \$0.00
 Retainage (@ 10%) \$0.00
 Total Due Contractor to Date \$0.00
 Less Previous Payments \$ -
 Amount Due From This Estimate \$0.00

ENGINEER'S CERTIFICATION:

I, the undersigned certifies that the work has been carefully inspected and to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the contract documents.

SUMMIT ENGINEERING, INC. By: _____ Date: _____

APPROVED BY OWNER:

BEAVER ELKHORN WATER DISTRICT By: _____ Date: _____

SECTION EIGHT
TECHNICAL SPECIFICATIONS

SECTION	DESCRIPTION	PAGE
I	Special Provisions	TS-I-1 through TS-I-2
II	General Provisions	TS-II-1 through TS-II-4
III	Submittals	TS-III-1 through TS-III-4
IV	Quality Control	TS-IV-1
V	Temporary Facilities	TS-V-1 through TS-V-2
VI	Mobilization/Demobilization	TS-VI-1 through TS-VI-2
VII	Silt Control	TS-VII-1 through TS-VII-4
VIII	Connections to Existing Water Lines	TS-VIII-1 through TS-VIII-2
IX	Water Lines and Fittings	TS-IX-1 through TS-IX-12
X	Gate Valves	TS-X-1 through TS-X-2
X-A	Air Relief Valves	TS-XA-1 through TS-XA-2
XI	Bore and/or Encase	TS-XI-1 through TS-XI-3
XII	Water Service Connections	TS-XII-1 through TS-XII-3
XIII	Hydrants and Blow-Offs	TS-XIII-1 through TS-XIII-3
XIV	Pavement Replacement	TS-XIV-1 through TS-XIV-5
XV	Booster Pumping Station	TS-XV-1 through TS-XV-9
XVI	Water Storage Tank	TS-XVI-1 through TS-XVI-6
XVII	Central Unit Based - Supervisory Control and Data Acquisition System	TS-XVII-1 through TS-XVII-18
XVIII	Seeding	TS-XVIII-1 through TS-XVIII-2

SECTION I
TECHNICAL SPECIFICATIONS
SPECIAL PROVISIONS

1.1 SCOPE

This specification sets forth OWNER'S special project requirements which are UNIQUE to this project. All requirements of this section shall be considered as integral parts of the successful completion of the Project. All items discussed herein are considered incidental to the overall accomplishment of the Project and no separate payment shall be made for these items.

1.2 CONFLICTING ELEMENTS

In the event of a conflict between the elements of the Contract Documents, the MORE STRINGENT REQUIREMENT ON THE CONTRACTOR SHALL GOVERN.

1.3 COMMUNICATIONS

1.3.1 The CONTRACTOR shall coordinate all work through the ENGINEER.

1.3.2 The CONTRACTOR shall notify the OWNER and ENGINEER at least 10 calendar days prior to any construction activity at the site.

1.4 WORKING HOURS

Paragraph 6.3 of the General Conditions is supplemented as follows:

1.4.1 Regular working hours are defined as up to 8 hours per day, Monday through Friday, beginning no earlier than 7:00 AM and ending no later than 7:00 PM, excluding holidays. Whenever the CONTRACTOR is performing any part of the Work, with the exception of equipment maintenance and clean-up, OWNER'S representation and/or inspection will be required.

1.4.2 Requests to work other than regular working hours must be submitted to the OWNER'S designated representative, at least 48 hours prior to any proposed weekend work or scheduled extended work weeks, to give the OWNER ample time to arrange for representation and/or inspection during those periods. Periodic unscheduled overtime on weekdays will be permitted provided that two hours notice is provided to OWNER'S designated representative. Maintenance and clean-up may be performed during hours other than regular working hours.

1.4.3 The OWNER incurs additional expense when the CONTRACTOR exceeds regular working hours. Consequently, CONTRACTOR shall reimburse the OWNER for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the regular working hours stipulated herein. These costs shall be a line item deduction from the CONTRACTOR'S monthly payment request. Overtime costs for OWNER'S personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the ENGINEER shall be calculated in accordance with the terms of the ENGINEER'S contract with the OWNER.

- THE END -

SECTION II

TECHNICAL SPECIFICATIONS

GENERAL PROVISIONS

2.1 SCOPE

This section of the technical specifications is prepared to establish general requirements applicable to the entire Project. All items discussed herein are considered incidental to the overall accomplishment of the Project and no separate payment shall be made for these items.

2.2 IDENTIFICATION OF PARTIES

OWNER - Beaver Elkhorn Water District. The OWNER owns and is responsible for the completed water facilities.

ENGINEER - Registered professional engineer designated by OWNER to provide design, construction inspection, and certification services.

CONTRACTOR- The entity(s) responsible under contract to OWNER to furnish labor, equipment, etc. to complete the work specified herein.

2.3 RECORD DRAWINGS

The CONTRACTOR shall furnish record drawings in accordance with the requirements of the 'Submittals' section of these specifications.

2.4 EXISTING UTILITIES AND UNDERGROUND FACILITIES

Attention is called to the presence of existing utilities and underground facilities. The CONTRACTOR is solely responsible to accurately locate, and avoid damage to, all existing utilities and underground facilities.

2.5 SCHEDULES

2.5.1 Progress and Payment Schedules. Within ten calendar days of Notice of Award prepare and submit to the ENGINEER a proposed construction progress schedule. The schedule shall be in the form of a bar chart addressing the major project activities. The bar chart shall provide for a comparison of the proposed schedule to actual completion.

2.5.2 Submittal Schedules. Within ten calendar days of Notice of Award no less than 10 calendar days after the effective date of the Agreement, prepare and submit to the ENGINEER a proposed submittal schedule.

2.5.3 Schedule Updates. All project schedules shall be updated for each CONTRACTOR pay request.

2.5.4 **WARNING:** NO CONTRACTOR PAYMENTS SHALL BE APPROVED BY THE ENGINEER UNTIL ACCEPTABLE PROJECT SCHEDULES HAVE BEEN PROVIDED BY THE CONTRACTOR. CONTRACTOR PAY REQUEST APPLICATIONS WILL BE IMMEDIATELY RETURNED IF NOT THEY ARE NOT ACCOMPANIED BY THE REQUIRED SCHEDULE UPDATES.

2.6 CONSTRUCTION PHOTOGRAPHS

2.6.1 The term "photograph" as used herein refers to a photographic view, including similar exposures taken to assure the usefulness of the photographic record. All photographs shall be taken in color, not black and white.

2.6.2 The CONTRACTOR shall photograph the project limits prior to construction. The same views shall be re-photographed upon completion of all construction activities. In lieu of photography, CONTRACTOR may opt to video the project limits. The CONTRACTOR shall furnish the ENGINEER two copies of the video cassettes for a completeness review. NO WORK CAN BE PERFORMED UNTIL THE ENGINEER HAS REVIEWED, AND ACCEPTED, THE PRE-CONSTRUCTION PHOTOGRAPHS AND/OR VIDEOS.

2.6.3 The CONTRACTOR shall have an average of ten (10) photographs per month made of the work during its progress and twenty (20) photographs of the completed facilities, in addition to those required above in paragraph 2.7.2.

2.6.4 All photographic work shall be done by a qualified, established photographer acceptable to the ENGINEER. Two prints of each photograph shall be provided.

2.6.5 The film negatives shall be retained in the files of the photographer until the completion of the project and shall then be turned over to the ENGINEER. The photographer shall release all copyrights, or other restrictions, on the use of the photographic prints and film negatives.

2.6.6 Each photograph shall have an identification label which provides:

1. Contractor's name
2. Short Description of View
3. Photo No. and Date Taken
4. Photographer's Firm Name

2.7 TESTING

The cost of all testing shall be borne by the CONTRACTOR unless directed otherwise.

2.8 INSTALLATION REQUIREMENTS

Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as suggested by the respective manufacturers, unless otherwise specified herein.

2.9 PROOF OF COMPLIANCE

See Quality Control - Section IV

2.10 MAINTAINING DRAINAGE

At no time shall the flow of any existing streams or gullies be blocked. Ditches or culverts which become inoperable during the work effort shall be promptly cleaned out.

2.11 DUST AND LITTER CONTROL

All access roads, excavations, embankments, waste areas, etc. within the project boundaries shall be maintained free of dust and litter which could cause a nuisance to others. Dust control shall be performed as the work proceeds and whenever a dust nuisance occurs. From time to time, as the need arises, the construction area shall be policed to collect all scattered litter and debris.

2.12 CLEAN UP

After all construction work is complete, and prior to final inspection, all disturbed areas shall be cleaned and left in a sightly condition. All unused material shall be removed and disposed of properly.

2.13 REPAIR OF DAMAGE

Any damage done to structures, fills, roadways, or other areas shall be repaired at the CONTRACTOR'S expense before final payment is made.

2.14 PROJECT LIMITS

The CONTRACTOR shall be responsible for satisfying himself as to the construction limits for the project. The CONTRACTOR shall not establish work, storage, or staging areas outside the project limits, unless otherwise directed or approved by the ENGINEER.

2.15 BURNING

The CONTRACTOR shall strictly observe all applicable local, state, and federal laws and ordinances regarding burning. There shall be no burning on Kentucky Department of Transportation right of way. No burning shall be conducted in close proximity to natural gas conveyance facilities or overhead utilities. All ash and partially burned debris shall be disposed of in a lawful manner approved by the ENGINEER.

2.16 MATERIALS SUITABLY STORED

Request for payment for stored materials MUST be prepared in compliance with Paragraph 14.2 of the General Conditions.

2.17 EXPLANATION OF MEASUREMENT AND PAYMENT TERMINOLOGY

The various items of work will be measured and paid for as "Lump Sum," "Each," or by "Unit Prices" as established in these specifications. These methods of payment are defined as follows:

- a) Lump Sum: When this term is used as an item of payment, it shall be inferred that the complete structure, structural unit or element of work is specified as the unit measurement. As such, it will be construed to include all necessary materials and accessories required for installation. No final measurements will be made.
- b) Each: The definition for Lump Sum applies to the term "each" except more than one may be included in the Project and the actual number installed will be the final measurement.
- c) Unit Price Quantities: When unit price quantities for a specific portion of the project are designated in the Contract Documents as the pay quantity, actual quantities for such specified portion serve as the basis for payment. Actual quantities shall be determined by the differences in measurements taken before and after construction.

- THE END -

SECTION III

TECHNICAL SPECIFICATIONS

SUBMITTALS

3.1 SCOPE

This specification sets forth the procedure to be employed in submitting and processing all CONTRACTOR submittals. This specification supplements paragraph 6.23 of the General Conditions.

3.2 SHOP DRAWINGS

3.2.1 The CONTRACTOR shall submit for the review of the ENGINEER Shop Drawings for all fabricated work and for all manufactured items required to be furnished in the Contract in accordance with the General Conditions and as specified herein. Shop Drawings shall be submitted in sufficient time to allow at least twenty-one (21) calendar days after receipt of the Shop Drawings from the CONTRACTOR for checking and processing by the ENGINEER.

3.2.2 ENGINEER's review of the CONTRACTOR's drawings shall be considered as a gratuitous service, given as assistance to the CONTRACTOR in interpreting the requirements of the Contract, and in no way shall it relieve the CONTRACTOR of any of his responsibilities under the Contract. Any fabrication, erection, setting or other Work done in advance of the receipt of Shop Drawings returned by the ENGINEER and noted as "Approved" or "Approved as Noted" shall be entirely at the CONTRACTOR's risk. The ENGINEER's review will be confined to general arrangement and compliance with the design concept and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fitting, tolerances, interferences, coordination of trades, etc.

3.2.3 Unless otherwise stated elsewhere in the Contract Drawings, a total of six (6) copies of all reviewed Shop Drawings shall be furnished to the ENGINEER for his use in accordance with the following sequence of operations:

- A) Initially six copies and one (1) reproducible copy shall be submitted to the Engineer for review. The ENGINEER will return one (1) copy and the reproducible copy to the CONTRACTOR after review.
- B) When Shop Drawings are returned for correction, they shall be immediately corrected and resubmitted for review as described above, and such procedures will not be considered as grounds for delay in completing the Work.

- C) Shop Drawings submitted by subcontractors shall be sent directly to the CONTRACTOR for preliminary checking. The CONTRACTOR shall be responsible for their submission to the ENGINEER at the proper time so as to prevent delays in delivery of materials.
- D) The CONTRACTOR shall thoroughly check all subcontractor's Shop Drawings as regards to measurements, sizes of members, materials and details to satisfy himself that they conform to the intent of the Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors by the CONTRACTOR for correction before submitting them to the ENGINEER. Before submission, the CONTRACTOR shall mark (stamp) the drawings as being checked and approved by him, dated and signed. The CONTRACTOR's approval (stamp) shall constitute a representation that all quantities, dimensions, field construction criteria, materials, catalog numbers, performance criteria and similar data have been verified and that, in his opinion, the submittal fully meets the requirements of the Contract Documents and the scope of work involved. Shop Drawings that are not stamped will not be reviewed.
- E) All details on Shop Drawings submitted for review shall clearly show the relation of the various parts and where the Work depends upon field measurements, such measurements shall be obtained by the CONTRACTOR and noted on the Shop Drawings before being submitted to the ENGINEER for review.
- F) All submissions shall be properly referenced to indicate clearly the specification section, location, service and function of each particular item. All submissions for one item or group of related items shall be complete. The ENGINEER reserves the right to reject manufacturer's publications in the form of catalogues, pamphlets, or other data sheets when they are submitted in lieu of prepared Shop Drawings. Such submissions shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink, and submissions showing only general information are not acceptable.
- G) If the Shop Drawings contain any departures from the Contract requirements, specific mention thereof shall be made in the CONTRACTOR's letter of transmittal. Where such departures require revisions to layouts or structural changes to the

Work, the CONTRACTOR shall, at his own expense, prepare and submit for approval revised layout and structural drawings. Such drawings shall be of the size approved by the ENGINEER.

H) All shop drawings shall be in English.

3.2.4 The ENGINEER will review the first and second shop drawing submittals at no cost to the CONTRACTOR. Review of the third submittal and any subsequent submittal will be at the CONTRACTOR's expense. Payment will be deducted from the Contract amount at a rate of 3 times direct labor cost plus expense.

3.3 RECORD DRAWINGS

3.3.1 The Record Drawings shall consist of the Contract Drawings (3 mil mylar, updated to 'As Built' conditions) and the approved Shop Drawings in reproducible form (3 mil mylar) and shall be submitted to the ENGINEER at any time upon request during construction, but no later than the Final Inspection.

3.3.2 Contract Drawings shall be legibly marked to record actual construction including:

- A) All deviations in location or elevation of any underground installation from that shown on the Contract Drawings.
- B) Any significant changes in above ground installation from approved Shop Drawings or Contract Drawings.
- C) No such deviations from the Contract Drawings or approved Shop Drawings shall be made without approval by the ENGINEER.

3.3.3 Specifications and addenda shall be legibly marked up to record:

- A) Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed.
- B) Changes made by Change Order or Field Order.
- C) Other matters not originally specified.

3.3.4 Shop Drawings shall be legibly annotated to record changes made after review.

3.3.5 Reproducible Record Drawings shall be submitted in accordance with the General Conditions, Supplementary Conditions, and General Requirements.

3.4 MEASUREMENT AND PAYMENT

Submittals shall be considered a part of CONTRACTOR'S Lump Sum Bid for "Mobilization/DeMobilization" and shall not be measured for separate payment.

- THE END -

SECTION IV

TECHNICAL SPECIFICATIONS

QUALITY CONTROL

4.1 CODES, STANDARDS AND INDUSTRY SPECIFICATIONS

- A) Material or operations specified by reference to published specifications of a manufacturer, testing agency, society, association or other published standards shall comply with requirements in latest revisions thereof and amendments or supplements thereto in effect on date of Advertisement for Bidders.
- B) Discrepancies between referenced codes, standards, specifications and Contract Documents shall be governed by the latter unless written interpretation is obtained from ENGINEER.
- C) Material or work specified by reference to conform to a standard, code, law, or regulation shall be governed by Contract Document when they exceed requirements of such references; referenced standards shall govern when they exceed Contract Documents.
- D) Proof of Compliance:

Whenever Contract Documents require that a product be in accordance with Federal Specification, ASTM designation, ANSI specification, or other association standard, at ENGINEER'S request, CONTRACTOR shall present an affidavit from manufacturer certifying that product complies therewith. Where requested or specified, submit supporting test data to substantiate.

4.2 MANUFACTURER'S DIRECTIONS

Utilize manufactured articles, materials and equipment as directed by manufacturers unless herein specified to contrary. Discrepancy between an installation required by Contract Documents and manufacturer's instructions and recommendations shall be resolved by ENGINEER before work may proceed. In all cases, the more stringent requirements shall govern.

4.3 TESTING

- A) All testing (when required) will be in accordance with the pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.
- B) The OWNER will select the testing laboratories.
- C) The CONTRACTOR will bear the cost of all testing unless directed otherwise.

- THE END -

SECTION V**TECHNICAL SPECIFICATIONS****TEMPORARY FACILITIES****5.1 TEMPORARY OFFICE**

5.1.1. The CONTRACTOR shall furnish and maintain a field office on site. The office shall be established at a location approved by the ENGINEER. AN AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR SHALL BE IN THE FIELD OFFICE AT ALL TIMES WHILE WORK IS IN PROGRESS.

5.2 MATERIAL STORAGE

The CONTRACTOR must make arrangements for his staging areas and areas of material storage.

5.3 SANITARY FACILITIES

The CONTRACTOR shall provide and maintain all necessary sanitary facilities at the site, in accordance with all applicable regulations, and shall properly remove same at completion of the project.

5.4 UTILITIES

The obtaining of all utilities which may be required for the construction shall be the responsibility of the CONTRACTOR.

5.5 PROJECT SIGN

The CONTRACTOR shall furnish and install a project sign reasonably conforming to the size and dimensions shown on Figure 1.

5.6 SAFETY

CONTRACTOR shall comply with all pertinent provisions of Kentucky Safety Standards of Division of Occupational Safety, Department of Labor, and Federal Occupational Safety and Health Construction Standards, that are in effect at time this Contract is entered into and during period in which Contract is to be performed.

5.7 MEASUREMENT AND PAYMENT

Provision of temporary facilities shall be considered a part of CONTRACTOR'S lump sum for mobilization and shall not be measured for separate payment.

- THE END -

FIGURE 1

BILL HALL BRANCH WATER LINE EXTENSION

CONTRACT NO. 1 - LINE AND SKID TANK
CONTRACT NO. 2 - PUMP STATION
CONTRACT NO. 3 - TELEMETRY

OWNER: BEAVER ELKHORN WATER DISTRICT
96 KENTUCKY ROUTE 3188
MARTIN, KENTUCKY 41649

ENGINEER: SUMMIT ENGINEERING, INC.
120 PROSPEROUS PLACE, SUITE 101
LEXINGTON, KY 40509

CONTRACTOR:

SOURCE OF FUNDS:

**NOTE: General form of sign shall be spaced by painter.*

*SIGN TO BE PAINTED ON 4' X 8' EXTERIOR PLYWOOD SHEETING.
(Strike out Contract that does not pertain)*

SECTION VI

TECHNICAL SPECIFICATIONS

MOBILIZATION/DEMobilIZATION

6.1 SCOPE

This element of work shall consist of the mobilization of the CONTRACTOR'S forces and equipment necessary for performing the work required under the Contract.

It shall include the purchase of contract bonds; transportation of personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other temporary facilities at the site; development of submittals and record drawings in accordance with Section III of these specifications; and other preparatory and incidental work.

This specification covers mobilization for work required by the Contract at the time of award. If additional mobilization costs are incurred during performance of the Contract as a result of changes or added items of adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

6.2 PAYMENT

THE CONTRACTOR'S LUMP SUM BID FOR MOBILIZATION/DEMobilIZATION MAY NOT EXCEED THREE PERCENT OF THE TOTAL BASE BID FOR THIS CONTRACT. Payment of the total lump sum price for "Mobilization/DeMobilization" will constitute full compensation for all labor, materials, equipment, and all other items necessary for and incidental to completion of the work. If the CONTRACTOR elects to demobilize and remobilize before completion of the work, no additional payment will be made.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

Fifty percent of the "Mobilization/Demobilization" price may be invoiced when the following conditions have been met:

- 1) the field office and sanitary facility are in-place;
- 2) the CONTRACTOR has furnished the bond for the Kentucky Department of Highways Encroachment Permit in the name of the OWNER.
- 3) the CONTRACTOR'S project schedules (construction, payment, and submittals) have been approved by the ENGINEER;
- 4) the CONTRACTOR has submitted a plan for disposal of waste materials;

- 5) the Project Sign has been erected; and
- 6) The CONTRACTOR has completed an amount of work equal in value to five percent (5%) of the total for the remaining bid items.

The remaining fifty percent of "Mobilization/DeMobilization may not be invoiced until the CONTRACTOR has submitted acceptable 'Record Drawings' (As Built Plans and Shop Drawings) in accordance with the requirements of Section III of these specifications.

- THE END -

SECTION VII

TECHNICAL SPECIFICATIONS

SILT CONTROL STRUCTURES

7.1 SCOPE

This work shall consist of furnishing all materials, equipment, labor, and incidentals necessary for the installation, maintenance, and removal of silt control facilities as directed by the ENGINEER.

7.2 GENERAL

The exact locations, configuration, and dimensions of the various types of silt control shall be directed by the ENGINEER at the time of construction. These structures shall be installed prior to any surface disturbance on the area for which they are necessary to control silt.

The CONTRACTOR shall schedule construction activities so that the amount of exposed soil is minimized. This is to be accomplished by disturbing only those areas which are to be worked immediately and by revegetating each area as soon as practical.

7.3 MATERIALS

Silt Control Hay Bales

7.3.1 Silt Control Bales shall consist of either straw or hay bales. All bales are to be firmly bound by twine, and are to be installed using wooden stakes or steel bars.

Silt Fence

7.3.2 Silt Fence filter fabric shall be specifically designed for this purpose by the manufacturer and shall meet or exceed the following specifications:

Bursting Strength	(ASTM D751)	150 psi
Grab Strength	(ASTM D1682)	100 psi
Permeability		0.02 to 0.03 cm/sec

Silt fence posts shall be either timber stakes (2" x 2" min) or pressed steel stakes set plumb and to sufficient depth to provide a sound anchor for the supporting wire fence and/or filter fabric.

Gabions

7.3.3 Wire: The wire incorporated in the lid and body of gabion units shall be constructed of galvanized steel. The mesh shall be constructed by double twisting the adjoining wire, i.e., both wires must be twisted in an interlocking, nonraveling fashion. All wire for corners, edges, selvages, and binding in both types of units shall be heavily galvanized with a minimum zinc coating of 0.80 ounces per square foot of uncoated wire surface, as determined by tests conducted in accordance with ASTM A90. The tensile strength of the wire shall be at least 60,000 pounds per square inch, and the mesh must have sufficient elasticity to permit 10 percent

elongation diameter of the individual wires. The following minimum wire diameters are required for non-PVC coated units only.

<u>Type /Use of Wire</u>	<u>--Minimum Diameters--</u>	
	<u>Gabion</u>	
Mesh wire	0.118	
Selvedge/corner wire	0.150	
Lacing/connecting wire	0.0866	

7.3.4 Rock Fill: The baskets shall be filled with clean, hard, durable limestone from a source approved by the ENGINEER. The stone shall be well-graded, with sizes ranging from a minimum of 5 inches to a maximum of 8 inches for gabion baskets, as measured in the greatest dimension; and shall otherwise comply with the requirements of these Technical Specifications.

7.3.5 Anchors: Steel anchors shall be standard deformed type bars conforming to ASTM A-615. The bars shall be manufactured from new billet steel of American manufacture, and shall have a minimum yield strength of 60,000 psi (Grade 60).

7.4 FABRICATION OF GABIONS

7.4.1 General: The gabion units shall be fabricated in such a manner that the base, sides, ends, and lids can be assembled at the construction site into a rectangular unit of the specified sizes. The body of the units shall be of single unit construction, the base, ends, sides, and lids formed of a single woven mesh unit.

All perimeter edges of the mesh forming the unit shall be securely selvedged so that the joints formed by tying the selvedges have at least the same strength as the body of the mesh.

Lacing wire shall be supplied in sufficient quantity to permit all sides, ends, and diaphragms of the body to be securely fastened, as well as to fasten the top to all sides, ends, and diaphragms of the body.

Dimensions for height, length, and width are subject to a tolerance limit of +3% of the manufacturer's stated sizes.

7.4.2 Gabions: The gabions shall be constructed with a hexagonal weave having an opening of approximately 3 1/4 inches by 4 1/2 inches. When the gabion length exceeds its width, it shall be supplied with diaphragms to form individual cells of equal length and width. The gabion unit shall be furnished with the necessary diaphragms secured in proper position on the base in such a manner that no additional tying at this juncture will be necessary. The diaphragms shall be of the same material composition as the gabion.

7.4.3 Certification: Each shipment of gabions to a job site shall be accompanied by a certification from the manufacturer, which states that the material conforms to the requirements of this Specification. The certification shall be on the manufacturer's letterhead and shall be signed by an officer of that company.

7.5 INSTALLATION

7.5.1 Silt Control Bales: The general locations and typical configurations of the type of silt control is subject to adjustments based on individual site conditions. Installation is labor intensive in order to assure stable and durable usage; additional hand labor may be required to provide adequate footing for the bales.

7.5.2 Silt Fences: Silt fences shall be supported with vertical wood posts which are protected by means of a metal cap or other device to prevent damage when hammers are used to drive the posts into the ground.

7.5.3 Gabions: The foundation shall be accurately prepared to accept the gabions. The foundation shall be inspected and approved by the ENGINEER prior to placement of the units.

Empty units shall be assembled individually on a hard, flat surface -- generally at the installation site. Care must be exercised to assure that each basket is stretched or manipulated as necessary to achieve the proper rectangular shape. Sides, ends, and diaphragms must be erected (and laced) to ensure the correct orientation of all seams and creases. Once assembled, empty units shall be set to the lines and grades directed by the ENGINEER.

All units shall be connected to the adjoining units, while empty, by lacing wire along the perimeters of their contact surfaces. Securing diaphragms, ends and sides, closure of units, and connecting adjoining units shall be accomplished by continuous stitching with alternating single and double loops at 4-inch intervals. All ends of lacing wire are to be securely fastened and not protruding.

Empty units are to be stretched, after being properly laced and connected to the adjoining unit(s), to obtain uniform alignment and to remove kinks. A standard fence stretcher, "come-along" or other means of tensioning the unit may be used. Adjacent rows of gabion units are to be placed such that the seams are offset.

The units shall be carefully filled with stone by hand and/or machine to maintain alignment; to avoid bulges, damage to coating, and/or separation of units; and to minimize voids. The maximum height from which stone may be dropped into gabion units shall not exceed 36 inches. In gabions over 2-foot high, the stone is to be placed in 12-inch lifts; adjusted by hand, if necessary, to form a reasonable smooth surface, and cross-ties (or bracing wires) installed. Cross-ties are to be looped through the mesh on opposing sides of the basket, and the wire tightened by twisting.

The ENGINEER may require the CONTRACTOR to use hand labor to selectively place the layers of stone along exposed surfaces (i.e., top, front, and ends) to provide a uniform surface and an overall appearance suitable to the site-specific situation at each installation. After each unit has been filled, the lid shall be leveled as necessary and secured to the sides, ends, and diaphragms using the previously described lacing (or stitching) technique.

7.6 MAINTENANCE

During the course of the project, silt control structures shall be maintained in sound condition and accumulations of silt which may threaten their effectiveness shall be removed. Silt removed from silt control structures shall be spread in the general vicinity of the individual structures, except when such practices may be a detriment to the environment and/or the project.

Upon completion of the project, the ENGINEER may direct the CONTRACTOR to remove, clean, or replace silt control structures and revegetate such disturbances in accordance with the Seeding Section of these Technical Specifications.

7.7 MEASUREMENT AND PAYMENT

Silt control structures shall be considered incidental to "6 Inch PVC Water Line, SDR 17" and shall not be measured for separate payment.

- THE END -

SECTION VIII

TECHNICAL SPECIFICATIONS

CONNECTIONS TO EXISTING WATER LINES

8.1 SCOPE

This work shall consist of furnishing and installing all necessary materials to connect new water mains to existing water lines.

8.2 SUBMITTALS

8.2.1 Submit five copies of documentation substantiating manufacturer's compliance with these specifications.

8.3 MATERIALS

8.3.1 Tapping Sleeves: The tapping sleeve shall be a bolted, split sleeve of cast or ductile iron construction of the appropriate diameter and approved by the manufacturer for use with the existing pipe encountered. The tapping branch of the sleeve shall be mechanical joint. The CONTRACTOR shall verify that the rated pressure class of the tapping sleeve exceeds the working pressure of the water line. Valves used in tapping operations shall be as specified in the valve section of these specifications except that the seat rings shall be of large diameter to permit entry of the tapping machine cutters.

8.3.2 Bends and Fittings: Bends and fittings shall be ductile iron, mechanical joint conforming to the requirements of Section IX of these specifications.

8.4 INSTALLATION

Installation shall be made as directed in the Design Drawings or as indicated in the manufacturer's literature. The CONTRACTOR shall make every possible effort to minimize any interruption in water service for existing customers. The CONTRACTOR must satisfy the following conditions prior to proceeding with the connection:

- a. The ENGINEER shall have accepted the new pipe line as in-place, suitably pressure tested, suitably disinfected, and ready for service.
- b. The CONTRACTOR shall have provided both the OWNER and the ENGINEER at least 72 hours advance written notice of the scheduled date for the water outage and connection. This notice should advise the OWNER to schedule personnel to terminate service in the affected pipe reach and to notify customers of the pending outage.

- c. The CONTRACTOR shall have all necessary bends, fittings, glands, adapters, etc. on-site on the date notice of the impending connections is forwarded to the ENGINEER.
- d. Connections to existing water lines may only be made Monday through Thursday. No connections to existing water lines may be made on Friday, Saturday, or Sunday.

All pipe bendings and fittings shall be restrained using a steel tiebolt joint restraint system (Star SuperStar system, or equal). The number of restraints employed per mechanical joint shall be based on the manufacturer's load tables for the ambient system pressure. Installation shall be made as directed in the Design Drawings or as indicated in manufacturer's literature.

8.5 MEASUREMENT AND PAYMENT

8.5.1 Measurement: Connections to existing water lines shall be measured each.

8.5.2 Payment: "Connect to Existing X Inch Water Line" shall be paid for at the contract price "each" as set forth in the Bid Schedule. This payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. Payment for the tapping valve will be made under the valve section of these specifications. There will be no separate payment for "hunt and search excavation", for restraint system, public notices, bends, fittings or other incidentals.

- THE END -

SECTION IX

TECHNICAL SPECIFICATIONS

WATER LINES AND FITTINGS

9.1 SCOPE

This work shall consist of furnishing, installing, testing, and disinfecting potable water line pipes of various diameters.

9.1.1. Quality Assurance/Submittals

9.1.1.1 Submit five copies of documentation to substantiate pipe material's compliance with these specifications.

9.1.1.2 Submit five copies of CONTRACTOR'S Bedding and Backfilling Plan. At a minimum the plan shall:

- a. Identify/acknowledge the segments of pipe line to be backfilled using "open", "gravel", and "paved" criteria,
- b. Include a representative Proctor Curve for the backfill material for all significant sections of pipe line to be backfilled using "paved" criteria (curve to be prepared and sealed by a geotechnical engineer registered in the State of Kentucky - curve not required if CONTRACTOR backfills entire trench with fine crushed stone),
- c. Include quarry's material certification for all aggregates utilized for bedding, haunching, and initial protective backfill, and
- d. Include name and qualifications of CONTRACTOR'S nuclear density technician (technician must be a full time employee of CONTRACTOR, spot checks by a sub-contracting testing firm are not acceptable).

9.1.1.3 Submit five copies of each pressure test performed within 48 hours of test completion. Documentation to include quantity of water used and pressure charts from recording pressure gage.

9.1.1.4 Submit five copies of documentation for each disinfection of each pipe reach within 7 days of collection of samples. Documentation to include form of chlorine applied, method of application, quantity of make-up water used, quantity of residual chlorine concentration one hour after dosing, residual chlorine concentration 24 hours after dosing, point of disposal

of waters of chlorination, method of de-chlorination, quantity of flushing water supplied, and results of bacteriological examination of water samples.

9.2 MATERIALS

9.2.1 General: All pipe used for potable water service shall be as indicated in the plans.

9.2.2 Ductile Iron Pipe, Fittings and Joints: Ductile iron pipe shall conform to the latest AWWA Specifications C151 (ANSI A21-51) with standard thickness as designated in AWWA C150. Thickness class shall be 350 unless noted otherwise on the plans by the ENGINEER.

The interior of the pipe shall be cement-mortar lined with bituminous seal coat in accordance with AWWA C104 (ANSI A21.4). Thickness of the lining shall be as set forth in Sec. 4-10-1 of the aforementioned specifications unless otherwise directed by the OWNER. The exterior of all pipe, unless otherwise specified, shall receive either a coal tar or asphalt base coating a minimum of one mil thick.

Where ductile iron pipe is to be installed in corrosive soil conditions, the pipe shall be protected by an eight mil thick polyethylene encasement meeting the requirements of ANSI A21.5. Such corrosive soils include but are not limited to salt marshes, saturated alkaline soils, cinder fills, areas of decaying vegetation, and waste dumps.

Bends and fittings shall be Mechanical Joint Compact Ductile Iron fittings, conforming to AWWA Specifications C153 for short body iron fittings. Fittings shall be tar-coated outside and shall receive the standard cement lining with bituminous seal coat on the inside as specified for the ductile iron pipe.

Joints shall be of the push-on (AWWA C111), mechanical joint (AWWA C111), restrained mechanical joint, flanged (AWWA C115) or ball and socket type as called for in the Plans. Bells for push-on type joints shall have an annular recess in the pipe socket to accommodate a single rubber gasket. Plain ends shall be suitably beveled to permit easy entry into the bell. The gasket is locked in place against displacement as the joint is assembled.

Mechanical joints shall be bolted and of the stuffing box type and shall consist of a bell with exterior flange and interior recess for the sealing gasket, a pipe or fitting plain end, a sealing gasket, a follower gland, tee-head bolts and hexagon nuts. A restrained mechanical joint is a mechanical joint with a ductile iron retainer gland equal to a Clow F-1058 retainer gland.

Joints for all bends and fittings for buried service shall be restrained mechanical joint type only (AWWA C111). Flanged joint pipe shall be used in vaults, pits and above ground service installation. Flanged joint pipe may not be used for buried service.

9.2.3 Polyvinyl Chloride Pipe, Fittings and Joints: PVC water pipe shall conform, at a minimum, to ASTM Specifications D-2241, and shall be pressure class 250. The pipe furnished under ASTM A-2241 shall have a standard dimension ratio not to exceed SDR 17, and shall be rated to a working pressure of at least 250 psi at 73.4°F.

Fittings shall be cast iron Mechanical Joint Class 250 conforming to AWWA Specifications C110 for short body cast iron fittings. Fittings shall be tar-coated outside, and shall receive the standard cement lining with bituminous seal coal on the inside as specified for the ductile iron pipe.

Joints shall be of the push-on type conforming to ASTM D3139 and F477 requirements for elastometric-gasket joints. All jointing material and lubricants shall be non-toxic.

9.2.3 Pipe Bedding: Pipe bedding stone shall be durable crushed limestone meeting the requirements of Section 805 of the Current Edition of the Kentucky Department of Highways publication "Standard Specifications for Road and Bridge Construction."

9.2.4 Geotextile Type III: Geotextiles shall be woven or non-woven geotextile fabrics meeting the material and strength requirements for Type III fabrics as set forth in Section 215 of the Current Edition of the Kentucky Department of Highways publication "Standard Specifications for Road and Bridge Construction."

9.3 INSTALLATION

9.3.1 Trench Excavation: Unless specifically directed otherwise by the ENGINEER, not more than 500 feet of trench shall be opened ahead of the pipe laying work of any crew and not more than 500 feet of open ditch shall be left behind the pipe laying work of any one crew.

All backfilled ditches shall be maintained in such a manner that they will offer no hazard to the passage of traffic. The convenience of the traveling public and property owners abutting shall be taken into consideration. All public or private drives shall be taken into consideration and shall be promptly backfilled or bridged. Excavated materials shall be disposed of so as to cause the least interference.

Trenches in which pipes are to be laid shall be excavated in open cut to the depths shown on the approved plans. The minimum allowable trench width shall not be less than the outside diameter of the pipe plus eight inches. Where rock is encountered, it shall be removed to a minimum depth of four inches below the pipe bells.

Unless specifically authorized by the ENGINEER, trenches shall in no case be excavated or permitted to become wider than two feet six inches plus the nominal diameter of the pipe at the level of or below the top of the pipe. If the trench does become wider than two feet six inches at the level of or below the top of the pipe, special precautions may be necessary, such as providing compacted granular fill up to the top of the pipe or providing pipe with additional crushing strength as determined by the ENGINEER. This determination shall take into account the actual trench loads that may result and the strength of the pipe being used.

All excavated materials shall be placed a minimum of two feet back from the edge of the trench.

Where conditions exist that may be conducive to slides or cave-ins, proper and adequate sheeting, shoring and bracing shall be installed (See Section 9.3.1.2) to provide safe working conditions and to prevent damage of work.

Trenches shall be kept free of water during the laying of pipe and until the pipeline has been backfilled.

9.3.1.1 Obstructions: In cases where storm sewers, gas lines, water lines, telephone lines, and other utilities, or other underground structures are encountered, they shall not be displaced or molested unless necessary, in which case they shall be replaced in as good condition as found as quickly as possible.

The CONTRACTOR shall notify the utility companies 48 hours prior to excavation adjacent to their facilities.

9.3.1.2 Shoring, Sheeting and Bracing: Where unstable material is encountered or where the depth of excavation in earth exceeds six feet, the sides of the trench or excavation shall be supported by substantial sheeting, bracing and shoring, or the sides sloped to the angle of repose. Sloping the sides of the ditch to the angle of repose will not be permitted in streets, roads, narrow rights-of-way or other constructed areas unless otherwise specified. The design and installation of all sheetings, sheet piling, bracing and shoring shall be based on computations of pressure exerted by the materials to be retained under construction conditions. Adequate and proper shoring of all excavations shall be

the entire responsibility of the CONTRACTOR; however, the ENGINEER may require the submission of shoring plans (accompanied by the supporting computations) for review prior to the CONTRACTOR undertaking any portion of the work.

Foundations adjacent to where the excavation is to be made below the depth of existing foundation, shall be supported by shoring, bracing or underpinning as long as the excavation shall remain open, or thereafter if required to insure the stability of the structure supported by the foundation, and the CONTRACTOR shall be held strictly responsible for any damage to said foundation.

Solid sheeting will be required for wet or unstable material. It shall consist of continuous vertical sheet piling of timber or steel with suitable wales and braces.

Care shall be taken to avoid excessive backfill loads on the completed pipelines, and the requirements that the width of the ditch at the level of the crown of the pipe be not more than two feet six inches plus the nominal diameters of the pipe shall, as set out in Section 9.3 hereinbefore, be strictly observed.

Trench sheeting shall not be removed until sufficient backfill has been placed to protect the pipe.

All sheeting, planking, timbering, bracing and bridging shall be placed, renewed and maintained as long as necessary.

9.3.1.3 Blasting: Blasting operations on this project are prohibited.

9.3.2 Pipe Bedding: In all cases the foundation for pipes shall be prepared so that the entire load of the backfill on top of the pipe will be carried on the barrel of the pipe and insofar as possible where bell and spigot pipe are involved so that none of the load will be carried on the bells.

Where undercutting and granular bedding are involved, the depth at the bottom of the bells of the pipe will be at least four inches above the bottom of the trench as excavated.

Supporting of pipe shall be as set out hereinbefore, and in no case shall the supporting of pipe on blocks be permitted. The Design Drawings present typical approved bedding methods.

9.3.2.1 Earth Foundation: All pipe shall be laid on a six inch bed of granular material to provide continuous support for the lower section of the pipe. Granular bedding shall be #9 crushed stone. Granular bedding shall be mechanically compacted prior to pipe placement.

9.3.2.2 Rock Foundation: If the trench bottom is in rock the excavation shall be undercut to a minimum depth of six inches below the bottom of the pipe. The pipe shall be laid on a bed of granular material to provide continuous support for the lower section of the pipe. Granular bedding shall be #9 crushed stone. Granular bedding shall be mechanically compacted prior to pipe placement.

9.3.2.3 Special Bedding: In wet, yielding mucky locations where pipe is in danger of sinking below grade or floating out of line or grade, or where backfill materials are of such a fluid nature that such movements of the pipe might take place during the placing of the backfill, the ENGINEER may order "Special Pipe Bedding." When the ENGINEER orders "Special Pipe Bedding" (in writing), the CONTRACTOR shall:

- a. overexcavate the mucky subgrade to the depth directed,
- b. install a Type III geotextile as illustrated in the detail drawings,
- c. backfill the geotextile with bedding stone, and
- d. overlap the geotextile envelope in accordance with the detail drawings.

It is to be expressly understood that "Special Pipe Bedding" may only be employed upon written order of the ENGINEER.

9.3.3 Laying Pipe: All pipe shall be laid with ends abutting and true to line and grade as shown on the plans. Supporting of pipe shall be as specified under "Pipe Bedding" hereinbefore and in no case will the supporting of pipes on blocks be permitted.

Fittings for the water mains shall be provided and placed as and where directed by the ENGINEER or shown on the plans. All open ends of pipes and of branches shall be sealed or plugged.

Before each piece of pipe is lowered into the trench, it shall be thoroughly inspected to insure its being clean. Any piece

of pipe or fitting which is known to be defective shall not be laid or placed in the lines. Any defective pipe or fitting discovered after the pipe is laid shall be removed and replaced with a satisfactory pipe or fitting. In case a length of pipe is cut to fit in a line, it shall be so cut as to leave a smooth end at right angles to the longitudinal axis of the pipe.

Granular bedding material as specified hereinbefore, shall be used to correct irregularities in the earth trench subgrade.

The interior of the pipe, as the work progresses, shall be clean. When laying of any pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood plug fitted into the pipe bell, so as to exclude earth or other material.

No backfilling (except for securing pipe in place) over pipe will be allowed until the ENGINEER, or his representative has made an inspection of the joints, alignment and grade in the section laid, but such inspection shall not relieve the CONTRACTOR of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are noted later.

9.3.4 Jointing Pipe: The pipe joints described shall be installed in accordance with the manufacturer's recommendations.

9.3.5 Backfilling Pipeline Trenches: All backfilling shall be accomplished in accordance with the details of this section. Any variances must be approved in writing by the ENGINEER.

When directed by the ENGINEER, the CONTRACTOR shall add water to the backfill material or dry out the material when needed to attain a condition near optimum moisture content for a maximum density of the material when it is tamped. The CONTRACTOR shall obtain a compaction of the backfill of at least 95 percent of Standard Proctor Density (ASTM D698) at a moisture content within two (2) percent of optimum.

Before final acceptance, the CONTRACTOR will be required to level off all trenches or to bring the trench up to the level of the surrounding terrain. The CONTRACTOR shall also remove from roadways, rights-of-way and/or private property all excess earth or other materials resulting from construction.

When the pipe trench crosses a street or roadway, the CONTRACTOR shall be responsible for maintaining the trench surface in a level condition at proper pavement grade at all times.

In all cases walking or working on the completed pipelines except as may be necessary in tamping or backfilling will not be permitted until the trench has been backfilled to a point one foot above the top of the pipe. The filling of the trench and the tamping of the backfill shall be carried on simultaneously on both sides of the pipe in such a manner that the completed pipeline will not be disturbed and injurious side pressures do not occur.

In all cases the pipe bedding and haunching shall be #9 crushed stone. The pipe bedding shall be mechanically tamped prior to placement of the pipe. The pipe bedding shall be thoroughly compacted taking care not to damage the pipe.

9.3.5.1 Method "A" Backfilling in Open Terrain:
Backfilling of pipeline trenches in open terrain shall be accomplished in the following manner:

In all cases the lower portion of the trench, from the pipe bedding to the springline (centerline) of the pipe shall be backfilled with #9 crushed stone. This stone shall be carefully and thoroughly compacted.

The portion of the trench from the springline of the pipe to a point 6 inches above the pipe shall be backfilled in six inch lifts with #9 crushed stone. Each lift shall be hand tamped taking care not to damage the pipe.

The portion of the trench from a point 6 inches above the top of the pipe to the ground surface shall be backfilled in six (6) inch lifts with material which is free from large rock. Incorporation of rock having a volume exceeding one-half cubic foot is prohibited. The backfill shall be mechanically tamped in six inch lifts to 95 percent of standard Proctor Density (ASTM D-698).

9.3.5.2 Method "B" Backfilling Under Graveled Areas:
Backfilling of pipeline trenches under existing and proposed graveled parking lots, driveways, etc. shall be accomplished in the following manner:

The pipe bedding and haunching shall be placed and compacted as described in Paragraph 9.3.5.1. The lower portion of the trench from the pipe springline to a point 6 inches above the pipe, shall be backfilled and lightly tamped with #9 crushed stone as described in Paragraph 9.3.5.1. The portion of the trench from a point 6 inches above the pipe to a point 6 inches below the ground surface shall then be backfilled with available material in six (6) inch lifts. Each lift shall be compacted to 100 percent of Standard Proctor Density (ASTM D-698) at a moisture content within two

percent of optimum. The final 6 inches of the trench backfill shall be thoroughly compacted dense graded aggregate.

9.3.5.3 Method "C" Backfilling Under Paved Areas: Backfilling of pipeline trenches under existing and proposed sidewalks, streets, proposed streets, and driveways shall be accomplished in the following manner:

The pipe bedding and haunching shall be placed and compacted as described in Paragraph 9.3.5.1. The lower portion of the trench from the pipe springline to a point 6 inches above the pipe, shall be backfilled and lightly tamped with #9 crushed stone as described in Paragraph 9.3.5.1. The portion of the trench from a point 6 inches above the pipe to a point 6 inches below the ground surface shall then be backfilled with #9 crushed stone in six inch (6) lifts. Each lift shall be compacted to 100 percent of Standard Proctor Density (ASTM D-698) at a moisture content within two percent of optimum.

The upper portion of the trench from a point six inches below the bottom of the existing or proposed pavement or concrete sub-slab may be backfilled with a base course of dense graded aggregate which shall be maintained flush with the pavement surface for at least 30 days prior to placement of the final surface. The excess dense graded aggregate shall be removed concurrently with the placement of the final pavement surface.

9.3.5.4 Settlement of Trenches: Wherever pipe lines are in, or across, driveways and streets, the CONTRACTOR shall be responsible for any trench settlement which occurs within these rights-of-way within one year from the time of final acceptance of the work. If paving shall require replacement because of trench settlement within this time, it shall be replaced by the CONTRACTOR. Repair of settlement damage shall meet the approval of the appropriate governing body.

9.3.5.5 Pavement Replacement: Pavement replacement shall be performed in accordance with Section XIV of these Technical Specifications.

9.4 TESTING OF LINES

On all projects involving the installation of water pipeline, the finished work shall comply with the provisions listed below, or similar requirements which will insure equal or better results:

- a) All water mains shall be given a hydrostatic test to 200 psi, under which leakage shall not exceed the limits established in Section 4 of AWWA Standard Specifications C600 (provided in the Reference Specifications of this Contract Document).
- b) All test waters shall be potable water obtained from the Beaver Elkhorn Water District distribution system. Withdrawals of water from the District system must be both authorized and metered. The District will bill the CONTRACTOR for all waters used in accordance with its current rate schedule.
- c) Where practicable, pipelines shall be tested between line valves or plugs in lengths of not more than 1500 feet.
- d) Duration of test shall be no less than twenty-four hours.
- e) Where leaks are evident on the surface where joints are covered, the joints shall be recaulked, repoured, bolts retightened or relaid, and leakage minimized regardless of total leakage as shown by test.
- f) All pipe fittings and other materials found to be defective under test shall be removed and replaced.
- g) Lines which fail to meet test requirements shall be repaired and retested as necessary until test requirements are complied with.
- h) The CONTRACTOR shall furnish a recording pressure gauge for the pressure and leakage test. The gauge shall be a Bristol Babcock Model No. 5311110A-143-002-310-610-000. Charts shall become the property of the OWNER at conclusion of test.

9.5 DISINFECTION OF WATER LINES

The new potable water lines shall not be placed in service, either temporarily or permanently, until they have been thoroughly disinfected by the Continuous Feed Method as set forth in the latest edition of AWWA Specification C-651. Specification C-651 is reproduced in the Reference Section of this Contract Document in its entirety.

The following requirements apply to the disinfection activity:

- a) All flushing and test waters shall be potable water obtained from the Beaver Elkhorn Water District system. Withdrawals of water from the District system must be both authorized and metered. Mountain Water District will bill the CONTRACTOR for all waters used in accordance with its current rate schedule.
- b) The Tablet and Slug Method of disinfection may not be used.
- c) The water lines shall be flushed prior to disinfection. Flush waters may be discharged to the nearest storm drain or surface water way in a controlled manner which will not result in environmental damage.
- d) The CONTRACTOR shall have a chlorine test kit in his possession for purposes of monitoring the disinfection dose.
- e) The free chlorine residual immediately after chlorine dosing shall be 50 mg/l. The free chlorine residual 24 hours after chlorine dosing shall not be less than 25 mg/l.
- f) The waters of disinfection shall be discharged to the nearest Sanitary Sewer (if available). If no Sanitary Sewer is available, the heavily chlorinated waters of disinfection shall be neutralized with an approved neutralizing agent prior to discharge.
- g) After disinfection and flushing, and before the water main is placed in service, bacteriological samples shall be collected and analyzed in accordance with the requirements of the Kentucky Department for Natural Resources and Environmental Protection. The new line may not be connected to the system until the samples have been approved.

9.6 MEASUREMENT AND PAYMENT

9.6.1 Measurement: Water pipe in place, complete, successfully tested and disinfected shall be measured in linear feet along the pipe centerline. Pipe fittings (tees, reducers, etc.) will be measured "each". The length of fittings measured for payment shall be deducted from the lineal feet of pipe laid to avoid "double" payment. Pipe bends will not be measured for separate payment. Bends shall be measured in linear feet. No allowance shall be made for laps or drops at connections.

"Special Pipe Bedding" - ordered in writing by the ENGINEER - in place and accepted shall be measured by the ton of bedding stone actually placed (to the top of the geotextile envelope). There will be no separate measurement of Geotextile Type III or other incidentals.

9.6.2 Payment: Payment for pipe will be made at the contract unit price per linear foot for each pipe class as set forth in the Bid Schedule. Payment for fittings will be made at the contract price "each" as set forth in the Bid Schedule. Such payment for pipe and fittings shall constitute full compensation for all materials, labor, equipment, and incidentals necessary for the completion of the work. Retainer glands for restrained mechanical joint pipe shall be considered incidental to the unit price for mechanical joint pipe.

Payment for "Special Pipe Bedding" - ordered in writing by the ENGINEER - shall be made at the contract unit price per ton for the actual quantity measured. There shall be no separate payment for Geotextile Type III or other incidentals.

- THE END -

SECTION X
TECHNICAL SPECIFICATIONS
GATE VALVES

10.1 SCOPE

This work shall consist of furnishing and installing gate valves of various diameters for potable water lines.

10.1.A QUALITY ASSURANCE/SUBMITTALS

10.1.A.1 Submit five copies of manufacturer's certification of compliance with applicable AWWA specifications. Certificate to be signed by corporate officer having authority to legally bind the company.

10.2 MATERIALS

10.2.1 Gate Valves: All gate valves shall be iron body, nonrising stem, fully bronze mounted. VALVES INSTALLED IN PVC WATER LINES SHALL BE RATED FOR WORKING WATER PRESSURES OF 200 PSI. VALVES INSTALLED IN DUCTILE IRON WATER LINES SHALL BE RATED FOR WORKING WATER PRESSURES OF 250 PSI. Valves shall be of standard manufacture and of the highest quality both as to materials and workmanship.

Gate valves larger than 12" shall be of double disc, parallel seat construction conforming to AWWA C500-80. Gate valves 12" and smaller shall be of resilient seat construction conforming to AWWA C509-80.

All gate valves for "below ground" service shall be furnished with mechanical joint end connections. Gate valves for "above ground" (or pit) installations shall be furnished with flanged end connections.

All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve.

Each gate valve for "below ground" service shall be installed in a vertical position with a valve box, as shown in the Design Drawings. Gate valves set with boxes shall be provided with a two inch square operating nut and shall be opened by turning to the left (counterclockwise). Each gate valve for "above ground" (or pit) installations shall be furnished with a hand wheel operator.

10.2.2 Valve Box and Cover: The valve box and cover shall be of cast iron construction (Clow F-2450, or equal).

10.2.3 Plug: If the gate valve is to be installed at the end of a line the CONTRACTOR shall provide a compact, ductile iron mechanical joint plug.

10.3 INSTALLATION

Trenching, bedding, and backfilling requirements for gate valves shall conform to the installation requirements for water lines and fittings. The base of the valve shall be anchored in concrete as shown in the Design Drawings. The valve box shall be installed vertically, centered over the stem of the operating nut. The valve box base shall be placed at least two inches above the flanged joint of the valve cover. The top of the operating nut should be no higher than the hub or upper part of the valve box base where it connects to the center section.

10.4 MEASUREMENT AND PAYMENT

10.4.1 Measurement: Gate valves for buried service in-place, tested, and accepted shall be measured each. Valves installed in vaults, pits, and pumping stations shall be considered incidental to the complete price for the vault, pit or pumping station and shall not be measured for separate payment.

10.4.2 Payment: Gate valves measured for payment shall be paid for at the contract price "each" as set forth in the Bid Schedule. Payment as specified shall be considered as full compensation for all labor, materials, equipment, and incidentals necessary to perform the work as required. The valve box and cover shall be considered incidental to the installation and shall not be measured for separate payment.

- THE END -

SECTION X-A

TECHNICAL SPECIFICATIONS

AIR RELIEF

10.A.1 SCOPE

The CONTRACTOR shall provide all labor, tools, materials and equipment necessary to furnish and install air release valves and boxes as shown on the Plans and as directed.

10.A.2 QUALITY ASSURANCE/SUBMITTALS

10.A.2.1 Submit five copies of itemized summary of source of manufacture of each item in air relief assembly. Provide manufacturer's certification of compliance with specifications for each item.

10.A.3 MATERIALS

10.A.3.1 Tapping Saddle, Corporation Stop: The tapping saddle and corporation stop shall meet the material requirements of the water service connection section of these specifications. 15.4.5 All hydrant parts shall be inspected in open and closed position to verify working conditions prior to backfilling.

10.A.3.2 Pipe: All pipe shall be $\frac{3}{4}$ " diameter rated for a working water pressure of 150 psi.

10.A.3.3 Air Release Valve: The air release valve shall be a simple lever type with cast iron body and stainless steel trim. A Valvmatic Model #15 with $\frac{3}{4}$ " NPT inlet or approved equal shall be employed.

10.A.3.4 Valve Box and Lid: The valve box and lid shall consist of a polyethylene box and cast iron lid meeting the material requirements of the water service connection section herein.

10.A.4 INSTALLATION

Installation shall include the complete assembly with box and top, shut-off valve, blow-off, air valve, and piping, fittings and union, all complete and ready for operation in general conformance with the Drawings. Work in and around the box will be done in a workmanlike manner leaving the top of the box one inch above the original ground surface.

10.A.5 MEASUREMENT AND PAYMENT

10.A.5.1 Measurement: "Air Relief" assemblies in-place, tested and accepted shall be measured "each."

10.A.5.2 Payment: Payment for "Air Relief" shall be made at the contract unit price "each" as set forth in the Bid Schedule for the actual number of assemblies measured. Payment as specified shall be considered full compensation for all labor, materials, equipment and incidentals necessary to perform the work as required.

- THE END -

SECTION XI
TECHNICAL SPECIFICATIONS
BORE AND/OR ENCASE

11.1 SCOPE

This work shall consist of furnishing and installing steel encasement pipes for potable water and sanitary sewer lines by boring, jacking, or open cut methods.

11.1.A Quality Assurance/Submittals

11.1.A.1 Submit five copies of certified mill test report on steel encasement pipe.

11.2 GENERAL

The CONTRACTOR shall comply with the previously obtained permits and approvals for completion of this work. Copies of the permits and/or approvals are reproduced in the Permits section of this document.

11.3 MATERIALS

11.3.1 Encasement Pipe: Encasement pipe shall be steel, plain end, uncoated, unwrapped, have continuously welded joints and have a yield point strength of 35,000 psi and conform to AWWA Specifications C200. The minimum wall thickness of the pipe shall be as indicated in the Detail Drawings.

In general, the inside diameter of the encasement pipe shall be 4 inches greater than the largest outside diameter of the carrier pipe. The Detail Drawings provide a table from which required encasement pipe diameters may be derived.

Field welding of encasement pipe shall be performed by a certified welder in accordance with the requirements of AWWA Specification C206-82.

11.3.2 Grout: Grout used to seal the annulus between the excavation and the encasement pipe shall be a 1 to 2 Portland Cement Grout meeting the requirements of Section 601 of the publication Standard Specifications for Road and Bridge Construction (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

11.3.3 Casing Skids: Casing skids shall be equal to stainless steel casing spacers manufactured by Cascade Waterworks Mfg. Co. of Yorkville, Illinois. Spacer shall consist of a bolt on T-304 stainless steel shell with runners of ultra high molecular weight polymer.

11.4 INSTALLATION - BORE AND JACK

No distinction shall be made between boring through earth or boring through rock. The CONTRACTOR shall conduct his own investigation of subsurface conditions and shall base his bid on his own findings.

The jacking will be allowed in one direction only. The installation procedure must provide for the placement of the encasement pipe concurrently with the removal of the soil.

Grouting between the excavation and the encasement pipe will be required if ordered by the ENGINEER or if, for any reason, the excavation exceeds one (1) inch larger than the outside diameter of the liner. Grout holes shall be provided in the tunnel lining with a spacing not to exceed four and one-half (4.5) feet measured longitudinally. The location of the holes shall be varied around the periphery of the encasement pipe to suit field conditions which will permit the proper grouting sequence to insure complete filling of void spaces outside the encasement pipe. The CONTRACTOR shall fill all the void space outside the encasement pipe with Portland Cement grout. The machine used for grouting shall permit the application of a pressure up to seventy-five (75) pounds per square inch in excess of any external water pressure. A gage shall be provided which will accurately indicate working pressure and this gage shall be carefully watched during grouting operations. The pressure shall at no time be allowed to exceed that considered safe or which would distort the encasement pipe. Grout pipes shall be one and one-half (1½) inches inside diameter.

The carrier pipe shall be installed after the encasement pipe is in place. The installation of the carrier pipe shall be in accordance with the manufacturer's specifications using casing skids as shown in the Detail Sheets of the Design Drawings. After the carrier pipe has been installed, inspected, and tested as specified, both ends of the encasement pipe shall be closed with a removable, water-tight "boot" in a manner acceptable to the OWNER.

11.5 INSTALLATION - OPEN CUT

Where the encasement pipe is placed in open cut, the encasement pipe trenching, bedding, laying, and backfilling shall conform to the requirements of the applicable sections of these Specifications. The carrier pipe shall be installed after the encasement pipe is in place. The installation of the carrier pipe shall be in accordance with the manufacturer's specification using casing skids as shown in the Detail Sheets of the Design Drawings. After the carrier pipe has been installed, inspected, and tested as specified, both ends of the cover pipe shall be closed with a removable, watertight "boot" in a manner acceptable to the OWNER.

11.6 MEASUREMENT AND PAYMENT

11.6.1 Measurement: "Bore and Encase for 'X' inch Water Line" of the applicable diameter will be measured by the linear foot of steel encasement pipe furnished, installed, inspected and accepted. "Open Cut Encase for 'X' inch Water

Line" of the applicable diameter will be measured by the linear foot of steel encasement pipe furnished, installed, inspected and accepted.

11.6.2 Payment: Payment for "Bore and Encase for 'X' inch Water Line" of the applicable diameter will be made at the contract unit price per linear foot as set forth in the Bid Schedule for the number of feet of encasement pipe measured. Payment for "Open Cut Encase for 'X' inch Water Line" of the applicable diameter will be made at the contract unit price per linear foot as set forth in the Bid Schedule for the number of feet of encasement pipe measured. Such payment shall constitute full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. Carrier pipe installed in the encasement pipe will be measured and paid for as indicated in the applicable sections of these Specifications.

- THE END -

SECTION XII

TECHNICAL SPECIFICATIONS

WATER SERVICE CONNECTIONS

12.1 SCOPE

This specification governs the provision of water service connections.

12.2 GENERAL

The CONTRACTOR shall provide .75" through 1" water service connections in accordance with this specification. Water service connections for meters in excess of 1" shall be provided by OWNER.

12.3 QUALITY ASSURANCE/SUBMITTALS

12.3.1 Submit five copies of itemized summary of source of manufacture of each item in water service connection. Provide manufacturer's certification of compliance with specification for each item.

12.4 MATERIALS

12.4.1 Service Pipe: Water service pipe shall be 0.75" or 1" seamless copper water tubing Type "K" (ASTM B-88, AWWA C800) or polyethylene pressure tubing, PE 3408, DR 9, pressure class 200 (AWWA C901-96).

12.4.2 Tapping Saddle: Tapping saddles shall be brass band type saddles equal to Ford S70 series for PVC pipe and the Ford 202 series for ductile iron pipe. The saddles shall be threaded to receive the appropriate diameter AWWA corporation stop.

12.4.3 Corporation Stop: Corporation stops shall conform to AWWA C800-84. Corporation stops shall have AWWA CC tapered thread inlets and pack joint or compression outlets for use with copper service line. The stop connections shall be appropriate for the service pipe diameter employed.

12.4.4 Meter Setter: The meter coppersetter shall be equal to the Ford 70 series V172-7 with 7 inch rise. If a pressure reducing valve is specified, a tandem coppersetter equal to a Ford TV172-7 shall be employed.

12.4.5 Meter Box and Lid: The meter box for coppersettlers shall be 18" internal diameter High Density Polyethylene Pipe. The meter box and lid shall be equal to the Ford C32 cast iron lid. The meter box for tandem coppersettlers shall be 20" internal diameter High Density Polyethylene Pipe. The meter box and lid shall be equal to the Ford C3 cast iron lid.

12.4.6 Meter: The meters shall be Sensus SR 2 series Meters $\frac{5}{8}$ " x $\frac{3}{4}$ " or 1" cold water type as indicated.

12.4.7. Pressure Regulating Valve: The pressure reducing valve shall be $\frac{3}{4}$ " or 1" regulator equal to Mueller's H-9310 (No. 2).

12.5 INSTALLATION

12.5.1. Taps: The taps shall be made in accordance with the manufacturer's directions. Service line shall be protected by 6" of fine sand or gravel as indicated in the detail drawings.

12.5.2. Meter Setting: The meter settings shall be accomplished in a neat and workmanlike manner. The lid of the meter box shall be set:

- 1) flush with paved surfaces.
- 2) 0.5" above grade in improved lawns, and
- 3) 2" above grade in unimproved areas.

12.5.3 THE CONTRACTOR MAY NOT INSTALL THE METER! A dummy meter shall be used to verify that each setting is installed in the proper working manner. The CONTRACTOR shall deliver the meters (suitably boxed) to the OWNER's public works director.

12.6 MEASUREMENT AND PAYMENT

12.6.1 Measurement: A water service shall be measured as two quantities. They are: (1) 'X' inch water service line and (2) 'X' inch meter set. 'X' inch water service line in-place, tested and accepted shall be measured in linear feet along the pipe centerline. 'X' inch meter sets shall be measured each. A 'meter set' is defined to include the tapping saddle, corporation stop, meter box, coppersetter, meter, pressure reducing valve (if applicable), meter box, and lid.

12.6.2. Payment: Payment for "'X' inch Water Service Line" will be made at the Contract Unit Price set forth in the Bid Schedule for the actual quantity measured. Payment for "'X' Inch Meter Sets" or "'X' Inch Meter Sets with Pressure Reducing Valves" will be made at the Contract Unit Price "Each" as set forth in the Bid Schedule. Payment for those items shall be considered full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work.

- THE END -

SECTION XIII

TECHNICAL SPECIFICATIONS

FIRE HYDRANTS AND BLOW-OFF VALVES

13.1 SCOPE

Provide all labor, tools, materials, and equipment to furnish and install the fire hydrants and blow-off valves as shown on the plans.

13.2 QUALITY ASSURANCE/SUBMITTALS

13.2.1 All hydrants shall be Mueller Company Model A-423. No other hydrant may be used without consent of the OWNER.

13.3 MATERIALS

13.3.1 Hydrant: Hydrants shall conform in all respects to the latest edition of AWWA C502. Hydrant barrel shall have a safety breakage feature above the ground line. All hydrants shall have 6 inch mechanical joint shoe connections, two 2-1/2 inch discharge nozzles and one 4-1/2 inch pumper nozzle with caps fitted with cap chains. Connection threads and operating nuts shall conform to National Standard specifications as adopted by National Board of Fire Underwriters.

Operating nut shall be 1-1/2 inches, and shall open left (counterclockwise). Main valve shall have 5-1/4 inch full opening and be of the compression type opening against water pressure so that the valve remains closed should the barrel be broken off.

Hydrant shall be fully bronze mounted. Main valve shall have a threaded bronze seat ring assembly of such design that it is easily removable by unscrewing from a threaded bronze drain ring. Bronze drain ring shall have multiple ports providing positive automatic drainage as the main valve is opened or closed.

Drainage waterways shall be completely bronze to prevent rust or corrosion.

Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stop shall be provided to limit stem travel. Stem threads

shall be enclosed in a permanently sealed lubricant reservoir protected from weather and waterway with O-ring seals.

Hydrants shall be designed for 200 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drains shall function and there shall be no leakage into the bonnet.

13.3.2 Blow-off: The blow off hydrant shall be equal to an Eclipse No. 2 post hydrant. A 3" resilient wedge gate valve conforming to the requirements of Section X of these Specifications shall be provided with each post hydrant as illustrated in the detail drawings.

13.4 INSTALLATION

13.4.1 Hydrants shall have the interior cleaned of all foreign matter prior to installation.

13.4.2 Hydrants shall be set plumb with not less than three cubic feet of crushed stone and backed with at least one cubic foot of Class "C" concrete or equivalent. If the soil is weak, and in the opinion of the ENGINEER, can not be adequately backed, 3/4" diameter stainless bridle rod collars shall be employed for restraint. the hydrant drain holes shall be thoroughly inspected prior to placement of the crushed stone.

13.4.3 A gate valve must be installed in the service lateral of all hydrants and blowoffs.

13.4.4 The hydrants shall be installed with the pumper nozzle facing the main route of access. The vertical distance from the pumper nozzle to the ground shall be 18 inches.

13.4.5 All hydrant parts shall be inspected in open and closed position to verify working conditions prior to backfilling.

13.4.6 Hydrants and blow-offs shall not be set in the flow line of a ditch or drainage way.

13.4.7 Blow-offs shall be installed in accordance with the details presented in the Design Drawings.

13.5 MEASUREMENT AND PAYMENT

13.5.1 Measurement: "Fire Hydrants" in-place, tested and accepted shall be measured "each". "Blow-Offs" in place, tested and accepted shall be measured "each".

13.5.2 Payment: Payment for "Fire Hydrants" and "Blow-Offs" shall be made at the contract unit price "each" as set forth in the Bid Schedule for the actual number of hydrants and blow-offs measured. The valve provided with a "Fire Hydrant" shall be measured and paid for under the valving section of these specifications. The valve provided with a "Blow-Off" shall be included in the price each for the "Blow-Off" and shall not be considered for separate payment. Payment as specified shall be considered full compensation for all labor, materials, equipment, and incidentals necessary to perform the work as required. Crushed stone backfill and concrete thrust backing are considered incidental to the hydrant installation.

- THE END -

SECTION XIV

TECHNICAL SPECIFICATIONS

PAVEMENT REPLACEMENT

14.1 PURPOSE

The purpose of this section is to outline requirements for the proper replacement of roadway and parking lot surfaces damaged through installation of utilities and the construction of new surfaces to serve the completed facilities.

14.2 QUALITY ASSURANCE/SUBMITTALS

- A) All standards, material, methods of installation, equipment and construction shall be in accordance with the current edition of the Kentucky Department of Highways (KYDOH) publication "Standard Specifications for Road and Bridge Construction," except as modified herein.
- B) Submit five copies of the following:
 - 1) Documentation to substantiate compliance with the materials section of this specification.

14.2 GENERAL

Existing paving in roadways, entrances, parking lots, etc. shall be restored to a condition equal to that which existed before the work began and to the satisfaction of the OWNER. In restoring improved surfaces new pavement is required. No permanent surface shall be placed within thirty (30) days after backfilling shall have been completed, except by order of the ENGINEER!

It is a project requirement that the CONTRACTOR furnish a temporary pavement equal in character to the existing pavement damaged by the construction within thirty (30) days of the completion of the trench backfilling. The CONTRACTOR shall maintain this temporary pavement until such time as the CONTRACTOR effects the permanent pavement replacement as set forth herein. CONTRACTOR'S INSTALLATION AND MAINTENANCE OF TEMPORARY PAVEMENT REPLACEMENT SHALL BE AT CONTRACTOR'S SOLE EXPENSE. This project requirement is established to encourage CONTRACTOR to complete permanent pavement replacements at the earliest possible date following backfilling.

14.3 PAVEMENT REPLACEMENT CLASSES

Pavement replacement includes the following types or classes:

- 1) Full Width Bituminous Replacement/Construction.

- 2) Bituminous Pavement Replacement with Concrete Sub-Slab.
- 3) Concrete Pavement Replacement.
- 4) Gravel Surface Replacement.

14.4 MATERIALS

14.4.1 Bituminous Concrete Surface: Bituminous concrete conforming to Sections 401 and 402 of the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction shall be used for replacement of all existing bituminous surfaces. All bituminous material aggregates, mineral fillers, tack and seal coats shall meet the appropriate materials specifications of the aforementioned Department of Highways publication. Before placing any bituminous surface, the CONTRACTOR shall submit the design plant mix for the ENGINEER'S approval. This submittal shall address both the last date the mix was approved by the Department of Highways and the location where the mix was most recently used.

14.4.2 Concrete Surface: Concrete for pavement replacement shall be a mixture of Portland Cement, fine aggregate, coarse aggregate, with or without air extrainment, as required, combined in the proportions, mixed, and placed as specified for Class "A" concrete in Sections 501 and 601 of the publication Standard Specifications for Road and Bridge Construction, (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

14.4.3 Dense Graded Aggregate: Dense graded aggregate used for a base shall be a durable, crushed limestone meeting the requirements of Section 805 of the publication Standard Specifications for Road and Bridge Construction, (1983 Edition, Kentucky Transportation Cabinet, Department of Highways).

14.5 INSTALLATION OF BITUMINOUS SURFACES

14.5.1 General: The two classes of bituminous surface are Full Width Bituminous Pavement Replacement/Construction, and Bituminous Pavement Replacement with Concrete Sub-Slab. The main differences between these classes are as follows:

- a) "Full Width Bituminous Pavement Replacement/Construction" shall be the complete replacement of an existing pavement. The pavement thickness for "Full Width" replacement or construction shall be three (3) inches. The pavement width is subject to the width of the existing paved surface or as specified in the plans.
- b) "Bituminous Pavement Replacement with Concrete Sub-Slab" shall require a 6" concrete sub-slab. The pavement thickness shall be no less than 3 inches. The pavement width shall not exceed the maximum widths as specified in the Detail Drawings.

14.5.2 Base Preparation: The pipe trench shall be backfilled as indicated on the Detail Drawings. This backfill shall be cut back, shaped, graded, and compacted. A base course of 6" of dense graded aggregate shall then be placed and compacted.

For Full Width Pavement Replacement/Construction the base course shall be prepared as follows:

- a. ALL PAVEMENT WHICH HAS BEEN DAMAGED MUST BE REMOVED PRIOR TO PAVEMENT REPLACEMENT OR CONSTRUCTION.
- b. Compact 6" of DGA in pipe trench per the Detail Drawings.
- c. Clean the existing pavement of construction debris (mud, gravel, etc.) This requires brooming!
- d. Potholes, ruts, and other severely deteriorated portions of existing pavement shall be patched with bituminous base.
- e. The cleaned and patched surface shall be jointly inspected by the CONTRACTOR and the ENGINEER. The surface must be accepted in writing by the ENGINEER before tacking operations begin.
- f. The cleaned and patched surface shall be shot with 0.4 lb/sy of RS-2 tack.

14.5.3 Surface Course: If the pavement replacement is "With Concrete Sub-Slab" then the subgrade shall be cut back to accommodate a 6" thick Class "A" concrete sub-slab (concrete shall conform to the applicable specifications herein).

The prepared pipe trench shall be paved with bituminous concrete Class I per the Detail Drawings. For full width construction, the full surface width shall receive a 2" base course and 1" surface course of bituminous concrete Class I per the Detail Drawings.

14.6 INSTALLATION OF CONCRETE SURFACES

14.6.1 Base Course: The pipe trench shall be backfilled as indicated on the Design Drawings. This backfill shall be cut-back, shaped, graded and compacted. A base course of 6" of dense graded aggregate shall then be placed and compacted.

14.6.2 Surface Course: The existing concrete pavement shall be cut-back with a concrete saw the distance as specified on the Design Drawings so that the final surface can be placed in a strip of uniform width. The subgrade shall be shaped, graded and compacted as directed by the ENGINEER. Class "A" concrete as described herein shall be placed to the greater of the existing pavement thickness or 6". The concrete slab shall be reinforced with 6" x 6" No. 4 wire mesh.

14.7 INSTALLATION OF GRAVEL SURFACES

14.7.1 Gravel Pavement Replacement: The pipe trench shall be backfilled as indicated on the Design Drawings. The trench backfill shall be cut-back, shaped, graded and compacted. A 6" course of dense graded aggregate shall then be placed and compacted.

14.8 MEASUREMENT AND PAYMENT

14.8.1 Measurement: "Full Width Bituminous Pavement Replacement/Construction" does not appear in the Bid Schedule. The CONTRACTOR may make a value engineering submittal on roadway resurfacing on a case by case basis. If the CONTRACTOR can demonstrate to the ENGINEER that a full width replacement of a street will be more economical and the ENGINEER accepts the CONTRACTOR's submittal, then "Full Width Bituminous Pavement Replacement/Construction will be measured by the ton of Bituminous Concrete surface installed and accepted. "Bituminous Pavement Replacement with Concrete Sub-Slab", and "Concrete Pavement Replacement" shall be measured by the linear foot of pipe trench surfaced. "Gravel Surface Replacement shall NOT be measured for payment as replacement of a gravel surface shall be considered incidental to the unit price for laying pipe. If the trench width to be resurfaced exceeds the maximum pay width as defined in the Design Drawings, the ENGINEER shall make an appropriate deduction from the quantities measured for payment.

PAVEMENT REPLACEMENT WILL NOT BE MEASURED FOR INSTALLATION OF SERVICE LINES! PAVEMENT REPLACEMENT FOR SERVICE LINES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR WATER SERVICE LINES.

Bituminous concrete employed for patching will NOT be measured for payment. The OWNER will not compensate the CONTRACTOR's negligent destruction of pavement.

14.8.2 Payment: Payment for "Bituminous Pavement Replacement with Concrete Sub-Slab", and "Concrete Pavement Replacement" shall be made at the contract unit price per linear foot as set forth in the Bid Schedule for the actual quantities measured. As described in the measurement section, the ENGINEER will consider value engineering submittals for "Full Width" pavement replacement. In the event that "Full Width" construction is authorized, payment shall be made at a negotiated price per ton of bituminous concrete furnished and installed. Said payments shall be considered full compensation for all materials, labor, equipment and incidentals necessary for the completion of the work. For example, this means that the concrete sub-slab and tack are incidental to "Bituminous Pavement Replacement with Concrete Sub-Slab".

NO PAYMENT WILL BE MADE FOR PAVEMENT REPLACEMENT FOR SERVICE LINE INSTALLATIONS! PAVEMENT REPLACEMENT FOR SERVICE LINES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR WATER SERVICE LINES.

- THE END -

SECTION XV

TECHNICAL SPECIFICATIONS

WATER BOOSTER PUMPING STATION

15.1 SCOPE

Furnish all labor and materials for proper installation of water booster pumping station(s) as shown on the Drawings and as called for herein. This includes:

- 1) Coordinate station location with OWNER;
- 2) Provision of service pole complete with service entrance, meter base, etc.;
- 3) Site preparation including any grading, excavation, or fill;
- 4) Erection of pump house or enclosure;
- 5) Installation of pumps, pressure tank, pipe, valving, etc.;
- 6) Provision of a hypochlorination unit;
- 7) Electrical work including control panel, lights, and heat;
- 8) Coordinate electrical controls and installation with OWNER'S telemetry contractor;
- 9) Pave access drive to pump station.

15.2 QUALITY ASSURANCE/SUBMITTALS

15.2.1 CONTRACTOR shall provide his experience record. CONTRACTOR shall have successfully constructed five (5) similar booster pumping station facilities. Experience statement shall include project name, size of station, owner name, owner phone number, engineer name and engineer phone number.

15.2.2 Submit six (6) bound copies of pump station shop drawings. Submittal to include station drawing, electrical schematic, and all accessories.

15.2.3 Submit six (6) copies of manufacturer's certified pump performance curves and pump warranties.

15.2.4 Submit six (6) bound O & M manuals for pump station. Manuals to provide basic instructions for routine maintenance, sources of spare parts, etc.

15.3 MATERIALS - PUMP PIT

15.3.1 General: The pump house shall be of masonry block construction with a concrete floor slab and roof as shown on the plans.

15.4 MATERIALS - MULTI-STAGE CENTRIFUGAL PUMP

15.4.1 See Table XV-A

15.5 MATERIALS - MOTOR CONTROLS

a. General: The motor control centers shall be completely self-contained. Each center shall provide:

1. A combination circuit breaker/overload unit providing overload protection, short circuit protection, reset and disconnect for all phases.
2. Across the line magnetic contactor.
3. Hand/off/automatic pump operations selector switch.
4. 120 volt control panel pilot circuitry.
5. Automatic alternator which will permit alternate operation of pumps under normal conditions.
6. Local Pressure Control: Pump operation shall be controlled by remote unit based radio supervisory control system (SCADA system, see applicable specification). Adjustable timers shall be provided as a back-up control system. Pump station to revert to timer control on failure of SCADA system.

- b. Construction: Panel to be NEMA 3R.
- c. Accessories: The panel shall be equipped with the following accessories:
 - 1. Low Suction Cut-Out, 0 to 100 psi control range. Time delay relay, 0 to 10 minute control. Field set low suction cut-out to insure the pump is not operated against a shut-off head.
 - 2. Condensation protection.
 - 3. Running time meters.
 - 4. Lightning arrestors.

15.6 MATERIALS - ACCESSORIES

- a. Pipe: Class 53, Flanged Joint ductile iron pipe conforming to AWWA, cement mortar lined, of sizes shown on Design Drawings.
- b. Valves:
 - 1. Construction: Resilient wedge gate valves meeting AWWA C509.
 - 2. Pressure: Minimum working pressure 250 psi.
 - 3. Joints: Flanged.
 - 4. Size: As shown on Drawings.
 - 5. Operator: Hand wheel with rising stem.
- c. Electric Check Valves:
 - 1. Construction: Golden Anderson 1730-D globe style electric check or approved equal. The check valve shall open at a controlled rate of speed whenever both the normal and emergency pilot controls are energized. When the valve begins opening, the indicator rod shall actuate a limit switch tied in with the pump motor starter circuit. De-energizing the normal solenoid pilot shall initiate a normal controlled valve closure. At a point near its seated position, the check valve indicator rod

shall actuate the limit switch which shall de-energize the pump motor and the emergency solenoid pilot. The actuating point of the limit switch shall be adjustable. In the event of an electrical power failure, an emergency solenoid pilot valve shall be de-energized which shall initiate a more rapid valve closure, but at a controlled rate of speed to minimize pump reversal.

2. Pressure: Minimum working pressure 250 psi. Hydrostatically tested.
3. Material: ASTM-A-126 cast iron body with B-62 bronze interior trim.
4. Joints: 250# flanges as required for piping selected.
5. Size: As shown on Drawings.

d. Silent Check Valves:

1. Silent checks will not be approved.

e. Air Release Valve:

1. Construction: Simple lever type air release valve of cast iron construction with stainless steel trim. Valmatic Model #15 or approved equal. Valve shall be capable of automatically releasing accumulated air from a fluid system while that system is in operation and under pressure.
2. Pressure: Valve must withstand pressure of 250 psi.
3. Joints: Screwed.
4. Size: Inlet 3/4" NPT, Outlet 3/8" HPT.

f. Strainer:

1. Construction: Ross Model 10B or approved equal. Screen 20 gage, type 304 stainless with 12 holes at 3/15 inch diameter each per inch of filtering surface.

2. Pressure: Minimum working pressure 150 psi.
 3. Joints: 125# flanges.
 4. Size: As indicated on Drawings.
- g. Pressure Gages:
1. Construction: Stainless steel roller and cam movement. Minimum face diameter of 4 1/2". Helicoid or approved equal.
 2. Number: 2
 3. Pressure Range: 0-100 psi Pump Suction
0-200 psi Pump Discharge
 4. Accuracy: 1/2 percent of scale.
 5. Size: Gauge connection 1/4" NPT.
- h. Portable Floor Crane:
1. Not required.
- i. Surge Relief Valve
1. 2" Golden Anderson Model 667 U or approved equal.
- j. DeHumidifier
1. Construction: Oasis brand by EBCO (or equal)
Model DC-45 (W.W. Grainger Stock 5E821)

15.7 MATERIALS - HYPOCHLORINATOR

15.7.1 The CONTRACTOR shall furnish and install a Liquid Metronic Incorporated Model A32 single head metering pump hypochlorinator (or approved equal) in accordance with the manufacturer's guidelines. The hypochlorinator injector shall be installed on the suction side of the pump. A 30 gallon polyethylene container shall be provided for a hypochlorite solution supply. The hypochlorinator shall be equipped with an anti-siphon device. The hypochlorinator shall be interlocked with the pump run circuit so that hypochlorite solution is only injected when the pumps are in service.

15.8 MATERIALS - ELECTRICAL

- a. General: The installation of the electrical system shall conform to the latest edition of the National Electrical Code. All permits necessary for the complete installation of the electrical systems shall be obtained by the CONTRACTOR from authorities governing such work. The CONTRACTOR shall be responsible for obtaining and paying for the power supply from the local power company in the OWNER'S name. The costs of all permits shall be borne by the CONTRACTOR.
- b. Service Pole: Fully treated, southern yellow pine.
- c. Service Entrance:
Cast Aluminum, 230 volt, 1 phase, 60 cycle system.
- d. Weatherproof Switch and Meter Socket: Band to pole with rust proof channels.
- e. Wiring: All wiring shall be properly sized for the load as set forth in the latest edition of the National Electrical Code. Provide a minimum of two duplex, grounding type, three (3) wire, polarized convenience receptacles in the pump house.
- f. Conduit: All conduit shall meet the requirements of the latest edition of the National Electrical Code.
- g. Lighting: One-two tube, 40 watt per tube, rapid start, "OSHA" approved enclosed and gasketed fluorescent light fixture.
- h. Heat: Wall mounted, fan *forced electric heater, 5000 BTU/H Dayton 2E434, Bracket 23433, or equal.
- i. Exhaust Fan/ Intake: Furnish and install a thermostatically controlled, wall mounted, exhaust fan with backdraft damper and an automatic louvered intake vent (cold air return) to exhaust excessive heat generated by pump motors. All vents to be equipped with pest screens. System to be capable of 300 CFM.

15.9 EXECUTION

15.9.1 Installation: Erect pump house in accordance with plans and applicable local building codes. Install pumps and controls in accordance with the pump manufacturer's instructions, these specifications and as shown on the Plans.

15.9.2 Electrical Inspection: All electrical work shall be inspected and approved by an electrical inspector. Two copies of the Certificates of Approval shall be provided to the ENGINEER before final acceptance. After installation, the pumping station shall be given a running test of all equipment.

15.9.3 Acceptance Testing: While the pump is running, all piping and seals shall be checked to insure that no leaks occur. All controls and warning indicators shall be checked for proper operation.

Any defects in the equipment or failure to meet the requirements of these specifications shall be promptly corrected by the CONTRACTOR by replacement. The decision of the OWNER as to whether or not the CONTRACTOR has fulfilled his obligation shall be final and binding on all parties.

15.9.4 Factory Start-Up Service: A factory trained service representative shall provide at least one(1) full day of start-up and training services after each water booster pump station is placed in service. The factory representative shall trouble shoot operational problems, provide bound copies of the pump station operations and maintenance manuals, and train the OWNER'S personnel in the operation and maintenance of the facility.

The factory representative shall provide a formal written report of start-up and training to the OWNER, ENGINEER, and CONTRACTOR.

15.10 MEASUREMENT AND PAYMENT

15.10.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

15.10.2 Payment: Payment shall be made at the Lump Sum Contract Price for:

a) 50 GPM Water Booster Pumping Station

as set forth in the Bid Schedule for the applicable contract. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

- THE END -

**TABLE XV-A
TECHNICAL SPECIFICATIONS SECTION XV
MATERIALS - WATER BOOSTER PUMPS**

**HALL BRANCH
BOOSTER**

CONTRACT

QUALITY CONTROL

Style

Multi-stage centrifugal pump

Make & Model

Grundfos CP 8-80 KU

PERFORMANCE DATA

Quantity

2

Operating Curve (GPM @ FT TDH)

0 GPM @ 430 FT

Shut Off Head

55 GPM @ 262 FT

Operating Point

70 GPM @ 125 FT

Useful Range

Efficiency @ Operating Point

Speed

3450

Power Service

1 Ph, 60 Cyc, 230 Volt

Horsepower

7.5

Suction

2"

Discharge

2"

SECTION XVI

TECHNICAL SPECIFICATIONS

20,000 GALLON WATER STORAGE TANK

16.1 SCOPE

This work shall consist of furnishing all labor and materials necessary for proper installation of an 20,000 gallon potable water storage tank. This includes:

- 1) Site excavation, backfill, and spoil disposal.
- 2) Valve vault, supply line (vault to tank), and overflow line
- 3) Access road construction including a suitable traveling surface.
- 4) Concrete foundation slab for tank support.
- 5) Tank installation complete with valve pit and accessories.
- 6) Tank test fill and disinfection.
- 7) 120 Volt AC power to valve vault.
- 8) Regrading, seeding and site cleanup.

16.2 SUBMITTALS

16.2.1 Submit six (6) complete sets of construction drawings and specifications for all work not shown in complete detail on the bidding drawings including detailed drawings of the foundation (skids). The drawings shall show the thickness of the plate and other data in connection with the work.

16.2.2 Submit five (5) copies of the manufacturer's guarantee. Manufacturer shall guarantee the structure against defective materials, including coatings, for a period of one year from the date of completion. If any materials prove to be defective within this time, they shall be replaced or repaired by the manufacturer.

16.2.3 Submit five (5) copies of CONTRACTOR'S guarantee. CONTRACTOR shall guarantee against defective workmanship for a period of one year from the date of completion. Any faulty workmanship found within one (1) year shall be repaired by the CONTRACTOR.

16.2.4 Submit five (5) copies of the documentation of test fill and disinfection. Documentation to include leaks repaired, quantity of test waters applied, chlorine concentrations achieved, method of dechlorination, point of disposal of waters of chlorination, and results of bacteriological examination of water samples.

16.2.5 Submit five (5) copies of proposed interior and exterior painting plan, complete with material safety data sheets, and documentation that paint systems meet the requirements of AWWA D-102, NSF 64, and the Kentucky Division of Water.

16.3 MATERIALS

16.3.1 Storage Tank Quality: The storage tank shall be shop fabricated in strict conformance with the current requirements of the AWWA "Standard Specifications for Steel Tanks, Stand Pipes, Reservoirs and Elevated Tanks for Water Storage" latest revision and shipped to the project as a complete unit ready for installation. All joints shall be welded. The tank shall have a storage volume of 20,000 gallons and shall be of standard dimensions.

16.3.2 Storage Tank Protective Coatings: The interior and exterior of the tank shall be painted in accordance with AWWA Standard D102 - Standard for Painting and Repainting Steel Tanks, Standpipes, Reservoirs, and Elevated Tanks for Water Storage - latest revision (Systems OCS-2-S and ICS-2-W). All paint that is used in contact with finished water must be approved by AWWA, NSF 64, and the Kentucky Department of Natural Resources and Environmental Protection, Division of Water. CONTRACTOR shall submit proposed paint systems for approval in accordance with the submittals requirements of this specification.

16.3.3 Accessories: The water tank shall be provided with the following accessories:

- 1) Openings: Provide two 24" diameter manway openings in the top of the tank. One opening shall have a 24" bolted sheet metal manhole lid. The other opening shall be equipped with a spring loaded, hinged cover for quick inspection of the tank interior.
- 2) Overflow: A 6" steel overflow pipe shall be provided as shown on the Drawings. The overflow pipe shall be provided with a weir or funnel at the elevation of the high water line. The overflow shall extend down the outside of the tank and into the valve pit as detailed in the Drawings. The overflow discharge shall be supplied with a flap gate to restrict entry of rodents.
- 3) Outside Tank Access: Provide steel ladder rings on 15" centers to allow maintenance personnel to access the spring loaded access hatch as detailed in the Drawings. Provide an OSHA approved safety cage for ladder rings.
- 4) Vent: An aluminum roof vent capable of relieving dangerous air pressures created by water entering or leaving the tank shall be provided. The overflow pipe shall not be considered as a tank vent. The vent shall be designed so as to prevent the ingress of birds, insects, and animals.
- 5) Level indicator: Not required.
- 6) Valve Pit: The valve pit shall include:
 - a) Pre-Cast concrete manhole ASTM C-478, internal diameter of 5' 0",
 - b) Flat slab manhole top with 3'x3' aluminum access hatch (Bilco Type K4, or equal),
 - c) AWWA C509 flanged joint gate valves of the size indicated in the Drawings with hand wheel operators,
 - d) Flanged joint, ductile iron tee of the size indicated in the Drawings,
 - e) Flanged joint ductile iron pipe to plumb the pit and push joint ductile iron pipe for the overflow drain,
 - f) Flap gate for overflow discharge.

- 7) Frost Box: The CONTRACTOR shall provide a frost box to contain the exposed inlet/outlet pipe. The frost box shall extend six inches below the ground. It will be constructed of 1/4 inch steel with a hinged lid and painted the same as the tank. The frost box shall be made so that no leakage of water within the frost box will occur. The frost box will be completely filled with blown insulation.
- 8) Tank Access: The access road to the tank shall be constructed as detailed in the Drawings. The CONTRACTOR shall grade the roadway, construct ditches to provide positive drainage, and construct a driving surface for track vehicles.
- 9) Foundation Slab: Provide reinforced concrete foundation slab as detailed in the Drawings.

16.4 TESTING - HYDROSTATIC

16.4.1 Following tank installation and backfilling, the tank shall be cleaned. The tank shall then be tested for liquid tightness by filling to its overflow elevation.

16.4.2 Any leaks disclosed by this test shall be corrected by the CONTRACTOR in accordance with the manufacturer's recommendations at no additional cost to the OWNER.

16.4.3 All test and flushing waters shall be potable water obtained from the OWNER'S water distribution system. Withdrawals of water from the OWNER'S system must be both authorized and metered. The OWNER will bill the CONTRACTOR for all waters used in accordance with its current rate schedule.

16.4.4 Water from the hydrostatic test fill may be subsequently employed for disinfection. If the water from the test fill is not used in this manner, it shall be purged from the system in an approved manner.

16.5 DISINFECTION

16.5.1 The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA specification C652-86, or latest revision, "Disinfection of Water Storage Facilities."

16.5.2 Disinfection shall not take place until the tank has been cleaned.

16.5.3 Acceptable forms of Chlorine for disinfection shall be:

- a) Liquid chlorine (section 3.1 AWWA C652-86).
- b) Sodium hypochlorite (section 3.2 AWWA C625-86).

16.5.4 Unacceptable methods of chlorination for disinfection are:

- a) Calcium hypochlorite (HTH brand chlorine.)

16.5.5 Acceptable methods of chlorination per AWWA C652-86:

- a) Section 4.1.1.
- b) Section 4.1.2.1
- c) Section 4.3

16.5.6 Unacceptable methods of chlorination per AWWA C625-86:

- a) Section 4.2.

16.5.7 Waters used for chlorination shall be purged from the system. A neutralizing agent shall be added to the water to prevent chlorination by-products from harming aquatic life.

16.5.8 The tank shall be thoroughly flushed after disinfection.

16.5.9 Following disinfection of the tank, bacteriological samples shall be collected and analyzed in accordance with the requirements of the Kentucky Department for Natural Resources and Environmental Protection. The tank may not be placed into service until samples have been approved.

16.6 - ELECTRICAL/TELEMETRY

16.6.1 General: The CONTRACTOR shall be responsible for obtaining and paying for a power supply to the tank site in the OWNER's name. The installation of all electrical components shall conform to the latest edition of the National Electric Code. All permits necessary for the complete installation of the electrical system shall be obtained by the CONTRACTOR from authorities governing such work. The costs of all permits shall be borne by the CONTRACTOR.

16.6.2 Service Pole and Telemetry Pole: Fully treated, southern yellow pine.

16.6.3 Service Entrance: Cast Aluminum - 1 phase.

16.6.4 Weatherproof Switch and Meter Socket: Band to pole with rust proof channels.

16.6.5 Wiring: All wiring shall be properly sized for the load as set forth in the latest edition of the National Electrical Code. Provide a minimum of two duplex, grounding type, three (3) wire, polarized convenience receptacles in the valve pit.

16.6.6 Conduit: All conduit shall meet the requirements of the latest edition of the National Electrical Code.

16.7 MEASUREMENT AND PAYMENT

16.7.1 Measurement: There shall be no measurement for payment as the work shall be Lump Sum.

16.7.2 Payment: Payment shall be made at the Lump Sum contract Price for "20,000 Gallon Water Storage Tank" as set forth in the Bid Schedule. Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work.

- THE END -

SECTION XVII

TECHNICAL SPECIFICATIONS

CENTRAL UNIT BASED
SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM

17.1 DESCRIPTION & SCOPE

A. Description of Work:

The work to be accomplished under this section shall consist of furnishing and installing the equipment necessary for a complete control system to function as specified herein and as shown on the drawings. The manufacturer shall furnish an RTU that is compatible with the existing all solid-state Radio Telemetry Supervisory Control and Data Acquisition (SCADA) system. The RTU shall be supplied, and warranted by the telemetry system manufacture to insure a single source of responsibility.

B. Scope of Project:

This section covers a Radio Telemetry SCADA and Instrumentation System to include the following:

- (2) Water Tower Remote Unit,
- (2) Booster Pump Remote Unit,
- (1) Programming modification of the existing central unit to include the new remotes.

At the time of preparation of these specifications, the proposed central unit for the Beaver Elkhorn Water District was not in place. If the central unit is in place at the time this contract is awarded, the CONTRACTOR shall program the existing central unit to include the Hall Branch remotes. The central unit shall interrogate the remote units to send control data and receive level, pressure, flow, status and alarm data as required from the new and existing remote units.

If the central unit is not in place, the Tank RTU and Pump RTU must be provided with a "Stand Alone" or "Peer to Peer" mode of operation. In "Stand Alone" mode, the tank will signal the pump station directly and activate the pump when required without intervention of an operator or the central unit.

C. Contractor shall supply:

- 1) Shop drawings prior to installation.
- 2) All the paper work and fees necessary to obtain a license for the Owner.
- 3) All equipment required by schedule.

- 4) All wiring and ancillary equipment, hardware, software, and appurtenances needed for proper installation and operation of equipment.
- 5) All labor for installation and start-up of the system including taps for pressure sensors.
- 6) Provide spare parts and maintenance tools as described below.
- 7) Operations and maintenance manuals as detailed below.

17.2 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

The system specified herein shall be the product of a manufacturer who can demonstrate at least ten (10) years of satisfactory experience in furnishing and installing comparable radio telemetry and control systems for water and wastewater installations.

The manufacturer of this system shall maintain a 24 hour available inventory of all replaceable modules to assure the Owner of prompt maintenance service and a single source of responsibility. The manufacture shall certify availability to the Engineer in writing at the time of bidder pre-qualification.

B. Codes & Standards:

The control system and its components shall comply will all applicable requirements of the following:

- Electrical Code Compliance (National & Local)
- NEMA Compliance
- IEEE Compliance
- EIA Compliance
- FCC Compliance

C. Approved Manufactures

- 1) Micro-Comm, Inc. Overland Park, Kansas
- 2) Approved Equal

17.3 SUBMITTALS

Complete electrical and dimensional drawings shall be provided for approval by the consulting Engineer prior to equipment fabrication. If a Bid for Alternate equipment is submitted, all submittals must accompany the alternate bid. The submittal data shall include the following:

A. Product Data

Provide product data sheets for each instrument and component supplied in the system. The data sheets shall show the component name as used on reference drawings, manufacturer's model number or other product designator,

input and output characteristics, scale or ranges selected, electrical or mechanical requirements, and materials compatibility.

B. Shop Drawings

Provide drawings for each panel showing the wiring diagrams for control circuits and interconnections of all components. The drawings shall include wiring diagrams for all remote devices connected to the panel.

C. Panel Layout Drawings

A front panel and sub-panel layout shall be included as part of each control panel drawing. Components shall be clearly labeled on the drawing.

D. Installation Drawings

Typical installation drawings applicable to each site in the system shall be included.

E. Warranty

Provide manufacturer's warranty.

17.4 DELIVERY, STORAGE, & HANDLING

All items shall be stored in a dry sheltered place, not exposed to the outside elements, until ready for installation. All items shall be handled with appropriate care to avoid damage during transport and installation.

17.5 SEQUENCING & SCHEDULING

A. Coordinate

Coordinate with other electrical and mechanical work including wires/cables, raceways, electrical boxes and fittings, controls supplied by others, and existing controls, to properly interface installation of the control system with other work.

B. Sequence

Sequence installation and start-up work with other trades to minimize downtime and to minimize the possibility of damage and soiling during the remainder of the construction period.

17.6 MAINTENANCE

A. Maintenance Data

Submit three (3) bound copies of maintenance manuals and "as built" drawings on all items supplied with the system. In addition to "as built" engineering submittal data and drawings, the manual shall include:

- a) Trouble Shooting Guides.
- b) Maintenance and calibration data for all adjustable items.
- c) Specific tuning instructions for Radio Transceivers as per FCC frequency restrictions.

17.7 JOB CONDITIONS

All instruments and equipment shall be designed to operate under the environmental conditions where they are to perform their service. The equipment shall be designed to handle lightning and transient voltages as normal environmental hazards. The environmental conditions are as follows:

A. Outdoor

The equipment will be exposed to direct sunlight, dust, rain, snow, ambient temperatures from -20 to +120 degrees F, relative humidity of 10 to 100 percent, and other natural outdoor conditions. The installations shall be hardened to with stand normal vandalism.

B. Indoor

The equipment will be capable of operating in ambient temperatures of +32 to +130 degrees F and relative humidity of 20 to 100 percent.

PRODUCTS

17.8 DISTRIBUTED CONTROL OPERATION

A. General

The control system uses "smart" Remote Terminal Units (RTUs) with micro-processors at all locations to provide a "distributed intelligence" type control system. The software programs used at all locations is stored in non-volatile "burned-in" type ROM memories. The system is "self-initializing" and does not require operator intervention after power interruptions, transients from lightning storms, or component changes. All microprocessors in the system shall include "watch-dog" circuitry to insure automatic restarts of the system. Each remote site in the system shall be assigned a unique digital address. The new RTU will be compatible with the existing RTUs in supporting these functions.

The system shall support both Programmed "Single Board Computer" RTUs (SBC-RTUs) and "Programmable Logic Controller" RTUs (PLC-RTUs). The SBC-RTUs shall use Single Board RTU type construction and be provided with software that is identical for all sites in the system. The SBC-RTUs shall "automatically" configure themselves, without operator intervention, from the site wiring and from commands down-

loaded from the Central Unit. The SBC-RTUs shall be interchangeable without regard to station type (i.e. Water Towers, Booster Pump Stations, Sewage Lift Stations, etc.).

B. Central Unit & Programmable Remote Unit Control Software

The Central Unit control algorithms shall have the ability to integrate both hardware and software operator inputs at the Central Unit along hardware inputs at the remote sites in to a cohesive automatic operating control system. As data is received, changes, or lost (i.e. a loss of signal from a RTU or CTU), the software shall automatically adjust the controlling algorithm to the new situation. At a minimum the control logic shall provide the following features:

- 1) Fully automatic control of up to 8 pumps (at up to 8 separate locations) from up to 8 different levels. The Central Unit shall be able to automatically shift control from one level to another or one pump to another in the event of RTU failure.
- 2) Monitor input conditions at RTUs to determine the validity of the controlling input signals (i.e. altitude valves must be open before controlling pumps from that level) and to determine the correctness of generating pump call commands (i.e. monitoring high discharge and low suction cut-off controls at booster pump stations) before starting pumps.
- 3) Automatic pump staging operation of pump stations with pumps of different capacities. Integrating different combinations of pumps in to the operation of each stage and automatically choosing alternate combinations of pumps for each stage should a pump fail or otherwise not be available (i.e. HOA is off). Automatic alternation of like sized pumps and automatic transfer to the next available pumping stage in the event of pump failure.
- 4) Automatic pump staging operation of pumps of different sizes from local discharge pressure and discharge flow inputs in a closed-loop system. The pumps shall be up-staged on decreasing discharge pressure and down-staged on decreasing flow rate. The control shall include PID (Proportional Integral Derivative) loop control of variable speed pumps mixed with constant speed pumps for the various stages required.
- 5) Automatic transfer of pump call to the next available pump on pump failure with out waiting for the controlling level to degrade to the next start level.
- 6) Automatic alternation of pumps after each cycle of operation.

- 7) Integrated Pump HAND/OFF/AUTO (HOA) selector switch operation with CALL/RUN/FAIL indication for each pump. The Central Unit shall be capable of integrating software and hardware HOA selections at the Central Unit with the existing control panel HOA selector switches at remote units (if specifically listed in the RTU input/output requirements).
- 8) Providing peak power load management by comparing current tank levels and tank fill rates for all tanks in the system to operator inputs for peak period inhibit/restore times and generating pump start commands to top-off tank levels prior to the beginning of the peak demand period.
- 9) Automatic staging of in-line pumping station operation including: starting of downstream pump stations on confirmation of upstream pumps running, implementing alternate course of action during pump failure, and monitoring station pressures to enable pump calls.
- 10) Provide "complementary" type control logic for pump stations with existing local pressure/flow control systems. The telemetry system shall monitor the pump run operation of the existing controls and utilize running pumps as its automatic lead and lag pump call functions.

17.9 VHF (154 - 173 MHz) RADIO CHANNEL DATA OPERATION

A. General

The control system shall be specifically designed for radio channel data communications. In addition to radio communications, the system shall be capable of simultaneous operation over hardware, dedicated phone line, and radio communication channels. All of the equipment required for operation of the system shall be directly owned by the Owner and included as part of this contract. Systems using third party repeaters, trunking masters, or leased equipment will not be allowed.

B. Communications

The control system shall operate in a half-duplex mode over a single VHF (154.47125MHz) radio frequency using "point-to-point" communication techniques. The control system shall monitor for a clear channel to allow co-channel operation with other radio systems.

All data transmitted shall be in digital word form using FSK (frequency shift keying) transmission and the standard ASCII data format. All transmissions shall include the address of the sender and the receiver, and be subject to check sum, parity, and framing error checks, to insure a minimum data

reliability of 1 error in 1,000,000,000 bits. Any transmissions that fail the data checking will be retried until correct. No data correction methods will be allowed. A plug-in RS232C data port shall be provided at all locations in the system to allow the use of a standard data terminal to view data exchanges between the remote sites and the central and to provide a means of extensive de-debugging.

The system shall provide a complete data update at least once every (3) minutes with some functions updating faster as required by local system conditions.

C. Radio Channel Operation

The system shall be capable of operation on the narrow band splinter frequencies of the Private Land Mobile Radio Services within the FCC's (Federal Communications Commission) rules and regulations regarding these telemetry channels. The manufacture shall guarantee operation under co-channel conditions with other radio systems without interference to this system. FSK tones, data baud rates, transmitter output power, transmitter deviation, antenna gain, and antenna height shall be chosen to comply with the FCC requirements Part 90 - Subpart B (90.17) for Local Government or Part 90 - Subpart D (90.63) for Power Radio Service. The radio system shall specifically meet the operating requirement that the sum of the highest FSK frequency and the amount of deviation shall not exceed 1.7 kHz for 3F2 emission (or 2.8 kHz for 6F2 emission) as detailed by the FCC for the specific frequency assigned.

The overall system design and operation shall provide a 20db pad over the minimum required for operation on all primary data paths (primary paths may include data relays) to insure a 98% reliability of communications. Remote sites required to support peer-to-peer back-up control shall provide 30db of pad to insure operation under all weather conditions and provide a 99.9% communications reliability. The 20db and 30db pad requirements and FCC rule compliance shall be demonstrated (at no additional cost) to the Engineer at his request. The testing shall be accomplished using an IFR AM/FM 1000S communications analyzer or equal equipment.

D. Remote Unit Data-Relay Operation

To facilitate system layout and future expansion all RTUs shall (under the direction of the CTU or CTUs) be able to relay data and commands to and from other RTUs as required to establish the desired path. Should the assigned relay site for a distant remote be inoperative, the Central Unit shall automatically choose another remote site to access the distant remote. All RTUs shall be able to include automatic antenna switching as part of their relaying operations.

E. FCC Licensing

The system supplier shall be responsible for collecting all information, generating all paper work, and paying all fees required to obtain a license on behalf of the Owner.

17.10 RADIO TRANSCEIVERS & ACCESSORIES (154 or 173 MHz)**A. General**

The Radio Transceivers shall be standard business band units that can be tuned, aligned, and repaired at any two-way radio shop. The units shall be tuned to FCC specifications for the specific frequency assigned. The radio equipment shall be FCC type approved and the system capable of operation on the narrow band splinter frequencies (154 or 173 MHz) in the Power Radio or Local Government service.

B. Radio Transceiver

The system manufacturer shall supply a 25 watt VHF radio transceiver to insure a high level of quality and reliability. The radios shall be adjustable to 4 watts output power as may be required for the FCC requirement of 20 Watts ERP (Effective Radiated Power). Radio transceivers without a 25 watt maximum output power will not be accepted. All connections to the radio shall be plug-in. The VHF radio transceiver shall have the following specifications:

Transmitter:

RF output power	25 watts (adjustable to 10)
Spurious & Harmonics	-57db below carrier
Frequency Stability	$\pm 0.0005\%$ (-30 to +60 degrees C)
Emission (VHF)	6F2 (with 1.2kHz deviation max) or 3F2 (with 1.2kHz deviation max)
FM hum and noise	-60db

Receiver:

Sensitivity	.30 microvolt (.5uV @ 20db quieting)
Selectivity	-75 db
Spurious image rejection	-75 db
Intermodulation	-75 db
Frequency stability	$\pm 0.0005\%$ (-30 to +60 degrees C)
Receive bandwidth	*6kHz (or 3kHz) as req'd to match the transmitter

- * The receiver bandwidth shall be reduced to match the transmit bandwidth of the transmitter and provide a minimum adjacent channel rejection of -50db. The radio transceivers shall be Motorola Radius M100 or approved equal.

C. Antenna & Coaxial Cable

The radio antennas at all locations shall be a five element Yagi, constructed with 3/8" diameter aluminum rod elements and 1-1/16" diameter aluminum pipe element support. The antenna shall have 8.0db forward gain with a 20.0db front-to-back ratio. The antenna shall be wind rated for a 100 MPH wind speed. The antennas shall be MC-Yagi, Decibel Products DB292, or Celwave PD390.

Antennas shall be cabled to the transmitter enclosure connection by a RG/8U low loss (less than 1.8db per 100ft @ 100MHz) coaxial cable with cellular polyethylene (foam) dielectric. The coaxial cable shall have a braided copper shield coverage of 97% and a long life weather resistant polyvinyl chloride jacket. The antenna coaxial cable connection shall be a constant impedance weatherproof Type N connector, taped with a weather resistant electrical tape, and coated with Scotchcote to insure a lifetime water tight assembly. The coaxial cable shall be Beldon 8214 type RG-8/U.

D. Antenna Lightning Protection

Coaxial connection to remote and central unit enclosures shall be by means of a coaxial type bulk-head lightning arrester. The units shall be rated at 1 kilowatt with a minimum 500V and maximum 2000V breakdown voltage. Coaxial lightning arrestors shall be a PD-593 or PolyPhaser IS-B50LU-CO.

E. Antenna Mounting Systems

Antennas shall be mounted at a height above ground that is consistent with FCC rules and regulations and provides adequate signal fade margin as described earlier. Antennas must be a minimum of 15 feet above ground and mounted as follows:

- 1) **Below Ground Structures:** The antenna shall be mounted on a 20' high Class II power pole with a 10' long X 1-1/2" galvanized mast secured to the side of the pole and extending 5' above the pole. A 3/4" rigid conduit with a weatherhead shall be provided from the below ground vault to a location 10 feet up the power pole for the coaxial cable.

17.11 INSTRUMENTATION & ACCESSORIES

A. General

All items in the control system (electronic cards, power supplies, radios, time delays, relays, etc.) shall be of plug-in construction or make use of a plug-in wiring harness and be interchangeable without recalibration. To insure field repair-ability by non-technical personnel, equipment that must be un-wired for replacement will not be accepted.

The following instrumentation devices and techniques shall be used as specifically called for in the RTU and CTU input/output sections of this specification.

B. Power Supplies

The common 12 VDC power supply shall provide $\pm 0.1\%$ line and load regulation with $\pm 10\%$ input variations. It shall have a temperature coefficient of $\pm 0.02\%$ per degree C. The input/output isolation shall be 100 Mohms DC (900Volts AC) with output transient response of 50 microseconds maximum. The power supply shall be sized to operate the remote unit equipment with or without the back-up battery in place. Power Supplies shall be an ELPAC Series OLV, Sola SLS, or approved equal.

C. Battery Back-up Operation

The remote units indicated shall be supplied with battery back-up operation. The rechargeable batteries shall be the sealed solid gelled electrolyte type, designed for float or standby service. Unless noted otherwise in the RTU descriptions, batteries shall be sized to maintain 24 hour service at water tower remotes and 3 hour service at booster pump stations and other remotes. The remote shall include a plug-in charging module to recharge the battery when power is resumed, maintain the charge between outages, and provide a low voltage cut-off to protect the battery from excessive discharge during prolonged outages. Pressure, level, and flow rate inputs shall continue to function on battery back-up. Batteries shall be Globe Gel/Cell or approved equal.

D. Single Phase 120VAC Power Line Lightning Protection

Every site in the system shall be equipped with a combination AC line filter and lightning arrester. The unit shall provide 3 stage lightning/transient protection including inductive and capacitive filtering, MOV overvoltage protection, and three terminal gas discharge tube lightning protection. The unit shall be a TT-LPU, TrippLite ISOBAR IB-2-0, or StediWatt Model 1120-3.

E. SBC-RTU, PLC-RTU, and Central Terminal Unit Inputs & Outputs

The RTU and CTU inputs and outputs shall share a common type of architecture and interface as follows:

- 1) **Discrete Inputs** - The RTU and CTU discrete inputs shall be 110 VAC with optically isolated couplers providing 1500 volts of isolation.
- 2) **Discrete Outputs** - The RTU and CTU discrete outputs shall be 400 VAC rated triac outputs providing 1500 volts of isolation. The output connections to other panels shall be further isolated by wiring to Time Delays or Relays as specified below.
- 3) **Analog Inputs** - Analog inputs shall be capable of processing a wide range of instrumentation signals (i.e. 4-20mA, 1-5VDC, 0-100mV, etc) from the various sensors required. The inputs shall have suppressed zero capability sufficient to suppress 85% of the incoming signal and transmit the remaining signal with a combined $\pm 0.5\%$ accuracy and resolution. The inputs must be implemented so that zero and span adjustments are a part of the remote site enclosure allowing the RTU & CTU cards, signal converters, and transducers to be changed without recalibration.
- 4) **Analog Outputs** - The analog outputs shall be 0-5 volt DC with $\pm 0.3\%$ accuracy. Analog signals that are provided to other control panels shall be optically isolated from the RTU/CTU signal with a universal wide-ranging signal converter. The isolated signal converter shall be capable of providing voltage or current signals with $\pm 0.25\%$ accuracy and 1000V of isolation. The signal isolator shall be Action Instruments model AP4380 or equal.
- 5) **Pulse Rate & Accumulator Inputs** - The pulse rate inputs shall be high speed TTL inputs capable of up to 50Hz signals. The flow rate signals shall be a dry switch closure (or open collector transistor) output from a propeller meter transmitter head. The pulse outputs shall be received directly by the remote unit and stored in a RAM memory register for report back to the Central Unit. The register shall be sized large enough to prohibit undetected register roll-over or over-flow. The remote unit shall provide the proper excitation voltage required by the propeller meter head transmitter.
- 6) The flow pulse data sent from remote units shall be analyzed and totalized by the central unit in 1000 gallon units. Pulse data shall be stored in non-volatile memory so that it is not lost during power outages or resets.

Pulse rate and total data shall be displayed at the Central Unit in standard engineering units (i.e. gpm, cfm, gallons, cubic feet, etc).

- 7) Flow rate signals that originate as analog (i.e. 4-20mA) signals shall be converted to pulse frequency signals for presentation to the RTU and CTU inputs.
- 8) **Digital Displays** - Digital displays of data shall be by means of a 1/2" high LCD or LED readout. Data shall be displayed in standard engineering units (i.e. psi, gpm, ft, etc).
- 9) **Digital Setpoint Assemblies** - Digital Setpoints shall be by 1/8" high thumbwheel setpoint assemblies providing settings of 000 through 999 directly in standard engineering units (i.e. psi, gpm, ft, etc). The thumbwheel assemblies shall have gold plated circuit board contacts and gold flashed wipers.

F. Time Delays & Relays

All control outputs from the telemetry system shall be via adjustable 0-5 minute electronic time delays with $\pm 0.2\%$ repeat accuracy. The time delays shall have both "timing" and "timed" LED indicators. All time delays and relays used in the system shall be of plug-in construction with rail or board mounted sockets and have pilot duty contacts rated for 3 amps resistive @ 240VAC (or 0.8 amps inductive) loads. Time delays and relays shall be IDEC series RTY-D, RY4S or approved equal.

G. Level Transducers (and submersible pressure transducers)

Level transducers shall be of the all solid-state two-wire transmitter type and be powered from the common 12VDC power supply with a 4-20mA output. The transducers shall have a combined error (linearity and hysteresis) of $\pm 0.2\%$ full scale and be temperature compensated to $\pm 2.5\%$ per 100 degrees Fahrenheit. RFI (Radio Frequency Interference) effects shall be less than 1.0% from 27 to 500MHz for 5 V/m field intensity 1 meter from the device. Zero and span adjustments shall be standardized so that transducers are interchangeable without recalibration.

The transducers shall be mounted at the sensing point and wired to the enclosure. Transducers for above ground mounting shall have a 1/2" conduit connection for cable entry. Transducers at water towers (and other outside locations) shall be mounted below grade. Below grade mounted units shall have cabling connections and suitable for a minimum of 100' submerged duty. All exposed parts shall be series 304 stainless steel and wetted parts shall be 316 stainless steel. The units shall be capable of two times full scale over pressure with out damage or change of calibration. Pressure/Level transducers shall be Foxboro Model 1125 or approved equal.

H. System Pressure Transducers (panel mounted)

Suction & Discharge pressure transducers shall be combination Bourdon tube and Linear Differential Transformer (LVDT) type solid-state transmitters. The units be powered from the common 12VDC power supply and provide a 1-5VDC output. The transducers shall have a combined error (linearity and hysteresis) of $\pm 1.0\%$ full scale. The units shall be constructed of a beryllium-copper Bourdon tube with a 1/4" NPT brass pressure inlet. Zero and span adjustments shall be standardized so that transducers are interchangeable without recalibration.

The transducers shall be mounted on brass bulkhead connections that extend through the bottom of the enclosure. No tubing connections shall be allowed inside the RTU enclosure.

I. Station Flooding Float Switches

The station flooding sensors shall be wall bracket mounted float switches capable of sensing less than 1-1/2" of water on the floor. The units shall be constructed with a Buna N float, 304 stainless steel float guide, a clear plastic protective shield, and a sealed neoprene cable connection. The float switch shall be Omega LV-70 or approved equal.

17.12 CENTRAL UNIT EQUIPMENT

The existing "Central Unit" composed of two separate computers communicating over a high speed serial link will be modified to provide monitoring and control of the new RTU. The first computer (called the Operator Display Console or ODC) is responsible for the operator interface to the system and provide display, alarm, and logging of all data. The second computer (called the Central Terminal Unit or CTU) provides all communications with remote units, local inputs and outputs, and local hardware display devices.

17.13 SINGLE BOARD COMPUTER REMOTE TERMINAL UNITS (SBC-RTUs)**A. General**

The Single Board Computer Remote Terminal Units (SBC-RTU) shall use micro-processors at all locations. The software programs used at all locations shall be stored in non-volatile "burned-in" type ROM memories. The system shall be "self-initializing" and include "watch-dog" circuitry. The software used shall be identical for all sites and interchangeable without regard to station type (i.e. Water Towers, Booster Pump Stations, Sewage Lift Stations, etc.). The SBC-RTUs shall support Mode 1, 2, and 3 type distributed control operations as described previously.

B. Construction

The remote units shall contain three major components: a Radio Transceiver, a SBC-RTU, and a single (common) 12VDC power supply. Each SBC-RTU shall be capable of controlling a local LCD display, reading BCD thumbwheel assemblies, inputting and outputting analog data (with zero and span adjustments to be part of the remote unit enclosure), and have 110 VAC inputs and outputs with 1000 volts of optical isolation. The SBC-RTU module shall have a plastic shroud to provide complete protection of all components and internal adjustments during handling. All connections to the SBC-RTU module shall be via gold flashed plug-in connectors. The remote station addressing shall be accomplished via this end mounted connector and not be affected by changing of SBC-RTU modules. LCD displays and thumbwheel assemblies shall be identical to those used at the Central Unit.

The SBC-RTU shall plug to a "passive" wiring interface board. The wiring interface board shall have plug-in connectors for the radio and power supply. All external input and output wiring connections to the RTU panel shall be by barrier type terminal strips. LED lamps shall indicate the status of all discrete inputs and outputs.

C. Enclosures

The remote unit enclosures for indoor mounting shall meet all the requirements for NEMA Type 4X enclosures. The enclosures shall be made of molded fiberglass polyester with a seamless foam-in-place gasket around the door. Subpanels shall be 14 gauge steel for 16x14 enclosures and 12 gauge for larger enclosures. Enclosures larger than 16x14 shall have a rolled lip on 3 sides of the door for added strength. Nema 4X enclosures shall be Hoffman Bulletin A-48 or A-17.

Remote site installations requiring equipment to be mounted outside shall have the remote unit NEMA 4X enclosure described above mounted inside a vented (and screened), lockable NEMA 3R enclosure. The double enclosure shall be required to control vandalism, provide complete weather protection, reduce the heating effects of the sun, and prolong the life of the equipment. The NEMA 3R enclosure shall be constructed of 14 gauge galvanized steel, with a drip shield top and seem free sides front and back. The NEMA 3R enclosures shall be finished with a dark gray enamel inside and out. The NEMA 3R enclosure shall be Hoffman Bulletin A-3.

17.13.1 WATER TOWER REMOTE UNITS

A. General

The Water Tower Remote Units shall use a Single Board Computer RTU. The water tower remotes shall transmit a suppressed head type signal representing only the upper usable range of the storage tank. The remote shall include a battery for 24 hour back-up operation as specified.

B. Construction

The tower transceiver shall be mounted in a NEMA 4X enclosure as specified. The tower remote equipment shall include an internal power switch, bulk-head coaxial cable lightning arrester, and a power line lightning arrester as specified earlier.

The level transducer shall be a two-wire transmitter suitable for below ground mounting as specified earlier.

C. Installation

The level transducer shall be installed at a point below freezing in the altitude vault (if available) or in a 24" fiber meter vault with a freeze proof lid. The pressure connection shall be equipped with a corporation stop providing a 1/4" NPT female connection for the transducer. The contractor shall run 3/4" rigid conduit from the vault or meter box to the transceiver enclosure for the transducer signal cable.

The antenna shall be as specified and mounted on the water tower at a height consistent with FCC requirements. The contractor shall provide a 3/4" rigid conduit with a weatherhead from the transmitter to the ladder on the tower.

D. Water Tower Remote Unit Input/Output Requirements

The Water Tower remotes shall send and receive the following information:

1) Hall Branch Tank:

DISCRETE INPUTS:

DI- 1) Power Failure

DISCRETE OUTPUTS:

DO- 1) Telemetry Control
Active

ANALOG INPUTS:

AI- 1) Water Level 0-25.0ft (upper usable range)

17.13.2 BOOSTER PUMP STATION REMOTE UNITS**A. General**

The Booster Pump Station Remote Units shall use a Single Board Computer RTU module. The booster pump station remotes shall receive Pump stop/start commands from the Central Unit (or its respective tower in back-up control). When the pump station is not being controlled by another site or its respective water tower, it shall turn off its "Telemetry Control" output causing pump control to revert to any existing back-up controls. The remote shall include a battery for 3 hour back-up operation as specified above.

B. Construction

Telemetry Control and Pump Command outputs to other panels shall be dry isolated contacts on plug-in 0-3 minute delays as specified. Indicating lamps shall display the status of these outputs on the front of the enclosure.

Local pressure inputs shall be by two-wire transducers as specified with the transducer located at the sensing point. Flow rate and totalizing shall be as specified above.

The booster pump station equipment shall be housed in a NEMA 12 enclosure. The booster station equipment shall include an internal power switch, bulk-head coaxial cable lightning arrester, and a power line lightning arrester as specified earlier.

C. Installation

The pressure sensors shall be mounted at the sensing point with 1/2" conduit run to the remote unit enclosure.

The antenna shall be mounted on a 10' long X 1-1/2" diameter mast secured to the side of the structure for an above ground pump stations or on a 20' power pole with 3/4" rigid conduit and a weatherhead run to the station for a below ground pump stations as previously specified.

D. Booster Pump Station Remote Unit Input/Output Requirements

The Booster pump station remotes shall send and receive the following data:

1) HALLS BRANCH BOOSTER PUMP STATION:

DISCRETE INPUTS:

- DI- 1) Pump #1 RUNNING
- 2) Pump #2 RUNNING
- 3) Power Failure
- 4) Phase Failure

- 5) Station Flooding
- 6) Low Suction Cut-off

DISCRETE OUTPUTS:

- DO- 1) Pump #1 CALL
- 2) Pump #2 CALL
- 3) Central Control
- 4) Telemetry Control
Active

ANALOG INPUTS:

- AI- 1) Future Use
- 2) Future Use

PULSE INPUT:

- PI- 1) Flow Rate 0-500gpm (Future)

EXECUTION**17.14 EXAMINATION**

The control system shall be completely tested prior to shipment. The entire control system shall be "Burned In" at the factory for a period of at least 20 days. The component equipment shall be computer tested and temperature cycled at zero degrees and at fifty degrees centigrade.

17.15 FCC LICENSING

The system manufacturer/supplier shall be responsible for collecting all information, generating all paper work, and paying all fees required to obtain a license on behalf of the Owner.

If the system supplier can demonstrate to the satisfaction of the Engineer that no VHF (154-173 MHz) frequency can be obtained, he may apply for a UHF (450-470 MHz) frequency for operation under Part 90.267 for 12.5 kHz offset channels or Part 90.261 for secondary basis channels. The system will still be required to operate with point-to-point operation within the FCC rules and regulations and provide the same rf path margins as detailed the specifications.

The UHF radios must meet or exceed the requirements set forth in these specifications for VHF radios, except that the radio output power may be 10 watts adjustable to 2 watts to meet FCC requirements. Antennas shall be constructed as previously specified and provide 10db of gain. No changes to the contract amount will be made for a change to UHF operation.

17.16 START-UP

The manufacturer shall supply "Factory" personnel for start-up service as needed to insure satisfactory operation. Subsequent trips to the job site to correct defects shall be made at no charge to the Owner during the warranty period.

17.17 WARRANTY

The RTU manufacturer shall supply a five (5) year parts and labor warranty for the new RTU supplied under this section (except as noted below). Power surges and lightning damage shall be included as part of the warranty.

The warranty shall begin from the time of "shipment". The manufacturer shall provide a 24 hour response to calls from the Owner. The manufacturer, at his discretion, may dispatch replacement parts to the Owner by next-day delivery service for field replacement by the Owner. Any damage to the control system caused by the actions of the Owner in attempting these field replacements shall be the sole responsibility of the manufacturer. If, during the warranty period, satisfactory field repair can not be attained by field replacement of parts by the Owner, the manufacturer shall dispatch "factory" personnel to the job site to complete repairs at no cost to the Owner.

17.18 MEASUREMENT AND PAYMENT

17.18.1 Measurement: The installation of the solid state Radio Telemetry Supervisory Control and Data Acquisition system shall be measured by EACH RTU unit furnished, installed, tested, and accepted. There shall be no measurement for payment of programming modification of the existing central unit.

17.18.2 Payment: Payment shall be made at the contract price EACH for RTU units measured for payment as follows:

- a) RTU Water Booster Pumping Station
- b) RTU Water Storage Tank

Payment as specified shall constitute full compensation for all labor, materials, equipment and incidentals necessary to complete the work. Since the SCADA project is organized as an independent contract this means that the CONTRACTOR must include his mobilization, insurance, bonding, and clean-up costs in his bid for the designated RTUs. There shall be no separate payment for the required programming modification of the existing central unit.

SECTION XVIII
TECHNICAL SPECIFICATIONS
SEEDING

18.1 SCOPE

The purpose of this section is to outline the requirements for proper seeding of all areas disturbed by construction.

18.2 SUBMITTALS

Submit six copies of documentation demonstrating compliance with the materials requirements of this specification.

18.3 SEEDING AND LANDSCAPING

18.3.1 General: All areas disturbed by construction shall be seeded in accordance with this specification.

18.3.2 Requirements: Seeding shall be accomplished as described hereinafter. Unless otherwise specified by the OWNER, all areas to be seeded shall be left smooth and thickly sown with a mixture of grasses at a rate of not less than 87 pounds per acre. Unless otherwise specified, the mixture shall consist of 60 percent Kentucky Fescue #31, 30 percent Creeping Red Fescue, and 10 percent White Clover. After completion of rough grading in seeding areas, the CONTRACTOR shall apply agricultural limestone at a rate of 4 tons/ac and then re-distribute previously stockpiled site topsoils to a loose depth of 6 inches. The topsoil shall then be fertilized with number 12-12-12 fertilizer at a rate of 1000 pounds per acre. After fertilizer has been distributed, the CONTRACTOR shall disc or harrow the ground to thoroughly work the fertilizer into the soil. The seed shall then be broadcast either by hand or by approved sowing equipment at the rate specified. The CONTRACTOR shall protect the seeded area with straw mulch or hay mulch at a rate of two tons per acre. Plastic netting shall be used to anchor the mulch on all slopes steeper than 3:1. All seed shall be certified. Any necessary reseeding or repairing shall be accomplished by the CONTRACTOR prior to final acceptance. If the construction work is brought to completion when, in the opinion of the ENGINEER, the season is not favorable for the seeding of grounds, then the CONTRACTOR shall delay this item of work until the proper season for such seeding as directed by the ENGINEER.

18.3.3 Success and Maintenance: All areas seeded shall have a ninety (90) percent vegetative cover of lawn grasses, free of noxious weeds, at the end of the first growing season. Additionally, no individual area of bare ground, where seeding has been unsuccessful, shall exceed one square yard in surface

area. CONTRACTOR shall be responsible for full expense of corrective seeding necessary to meet this performance criterion. OWNER shall incur no expense for remedial seeding.

18.3.4 Equivalency: The CONTRACTOR may submit an alternate plan for establishment of vegetative cover. However, no alternative revegetation methodology shall be employed without the express written approval of the ENGINEER.

If the CONTRACTOR employs an alternative revegetation methodology, he is still bound by the Success and Maintenance requirements of this specification.

18.4 MEASUREMENT AND PAYMENT

Seeding shall be compensated as a Lump Sum payment item. No measurements will be made for this work. The CONTRACTOR may invoice for seventy five percent (75%) of the Lump Sum amount upon CONTRACTOR'S completion of seeding activities and ENGINEER'S acceptance of same. The CONTRACTOR may not invoice for the remaining twenty-five percent (25%) of the Lump Sum amount until the Success and Maintenance requirements of this specification have been met. Payment in full for "Seeding" shall be considered full compensation for all topsoil redistribution, seedbed preparation, seed, lime, fertilizer, corrective seeding, labor and incidentals furnished pursuant to this section.

- THE END -

SECTION NINE

REFERENCE SPECIFICATIONS AND REPORTS

SECTION	DESCRIPTION	PAGE
1	Section Four of AWWA C600 from AWWA Standard for Installation of Ductile Iron Water Mains entitled "Hydrostatic Testing".	RS-1 through RS-4
2	AWWA C651 - AWWA Standard for Disinfecting Water Mains	RS-5 through RS-15

American Water Works Association
ANSI/AWWA C600-87
(Revision of ANSI/AWWA C600-82)



AWWA STANDARD
FOR
INSTALLATION OF DUCTILE-IRON WATER
MAINS AND THEIR APPURTENANCES



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AMERICAN WATER WORKS ASSOCIATION

6666 West Quincy Avenue, Denver, Colorado 80235

SECTION 4: HYDROSTATIC TESTING

WARNING: The testing methods described in this section are specific for water-pressure testing. These procedures should not be applied for air-pressure testing because of the serious safety hazards involved.

Sec. 4.1 Pressure and Leakage Test**4.1.1 Test restrictions.**

Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section.

Test pressure shall not exceed pipe or thrust-restraint design pressures.

The hydrostatic test shall be of at least 2-h duration.

Test pressure shall not vary by more than ± 5 psi (35 MPa or 0.35 bar) for the duration of the test.

Valves shall not be operated in either direction at differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the rated valve pressure can result in trapped test pressure between the gates of a double-disc gate valve. For tests at these pressures, the test setup should include provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or fully opened if desired.

Test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

4.1.2 Pressurization. After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure at the point of testing. Each valved section of pipe shall be slowly filled with water, and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the owner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

4.1.3 *Air removal.* Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the owner.

4.1.4 *Examination.* Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to the owner.

4.1.5 *Leakage defined.* Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi (35 MPa or 0.35 bar) of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

4.1.6 *Allowable leakage.* No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD\sqrt{P}}{133,200} \quad (\text{Eq 1})$$

Where:

- L = allowable leakage, in gallons per hour
- S = length of pipe tested, in feet
- D = nominal diameter of the pipe, in inches
- P = average test pressure during the leakage test, in pounds per square inch (gauge)

In metric units,

$$L_m = \frac{SD\sqrt{P}}{2816} \quad (\text{Eq 2})$$

Where:

- L_m = allowable leakage, in litres per hour.
- S = length of pipe tested, in metres.
- D = nominal diameter of the pipe, in inches.
- P = average test pressure during the leakage test, in bars.

These formulas are based on an allowable leakage of 11.65 gpd/mi/in. of nominal diameter at a pressure of 150 psi.

4.1.6.1 Allowable leakage at various pressures is shown in Table 6.

Table 6 Allowable Leakage per 1000 ft (305 m) of Pipeline*—gph†

Avg. Test Pressure psi (bar)	Nominal Pipe Diameter—in.															
	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54
450 (31)	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60
400 (28)	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11
350 (24)	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58
300 (21)	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02
275 (19)	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72
250 (17)	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41
225 (16)	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03
200 (14)	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73
175 (12)	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36
150 (10)	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97
125 (9)	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53
100 (7)	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

†To obtain leakage in litres/hour, multiply the values in the table by 3.785.

4.1.6.2 When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gph/in. (0.0012 L/h/mm) of nominal valve size shall be allowed.

4.1.6.3 When hydrants are in the test section, the test shall be made against closed hydrant valves.

4.1.7 *Acceptance of installation.* Acceptance shall be determined on the basis of allowable leakage. If any test of laid pipe discloses leakage greater than that specified in Sec. 4.1.6, the contractor shall, at his own expense, locate and make approved repairs as necessary until the leakage is within the specified allowance.

4.1.7.1 All visible leaks are to be repaired, regardless of the amount of leakage.

American Water Works Association



AWWA C651-86
(Revision of AWWA C601-81)

AWWA STANDARD FOR DISINFECTING WATER MAINS

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard presents essential procedures for disinfecting new and repaired water mains. All new water mains shall be disinfected before they are placed in service. All water mains taken out of service for inspecting, repairing, or other activity that might lead to contamination of water shall be disinfected before they are returned to service.

Sec. 1.2 References

This standard references the following documents. The latest current edition of each forms a part of this standard where and to the extent specified herein. In case of any conflict, the requirements of this standard shall prevail.

AWWA B300—Standard for Hypochlorites.

AWWA B301—Standard for Liquid Chlorine.

Simplified Procedures for Water Examination. AWWA Manual M12. AWWA, Denver, Colo. (1978).

Standard Methods for the Examination of Water and Wastewater. APHA,* AWWA, and WPCF.† Washington, D.C. (16th ed., 1984).

Additional materials relating to activity under this standard include:

Material Safety Data Sheets for forms of chlorine used (provided by suppliers).

Chlorine Institute, Inc.‡—*Chlorine Manual.*

AWWA—*Water Quality and Treatment.*

AWWA—*Introduction to Water Treatment.*

Safety Practice for Water Utilities. AWWA Manual M3. AWWA, Denver, Colo. (1983).

Water Chlorination Principles and Practices. AWWA Manual M20. AWWA, Denver, Colo. (1973).

*American Public Health Association, 1015 15th St. N.W., Washington, DC 20005.

†Water Pollution Control Federation, 2626 Pennsylvania Ave. N.W., Washington, DC 20037.

‡Chlorine Institute, Inc., 70 W. 40th St., New York, NY 10018.

Sec. 1.3 Record of Compliance

The record of compliance shall be the bacteriological test results certifying the water sampled from the water main to be free of coliform bacteria contamination.

SECTION 2: FORMS OF CHLORINE FOR DISINFECTION

The forms of chlorine that may be used in the disinfection operations are liquid chlorine, sodium hypochlorite solution, and calcium hypochlorite granules or tablets.

Sec. 2.1 Liquid Chlorine*

Liquid chlorine contains 100-percent available chlorine and is packaged in steel containers usually of 100-lb, 150-lb, or 1-ton net chlorine weight. Liquid chlorine shall be used only (1) in combination with appropriate gas-flow chlorinators and ejectors to provide a controlled high-concentration solution feed to the water to be chlorinated; (2) under the direct supervision of a person who is familiar with the physiological, chemical, and physical properties of liquid chlorine, and who is trained and equipped to handle any emergency that may arise; and (3) when appropriate safety practices are observed to protect working personnel and the public.

Sec. 2.2 Sodium Hypochlorite†

Sodium hypochlorite is available in liquid form in glass, rubber-lined, or plastic containers typically ranging in size from 1 qt to 5 gal; containers of 30 gal or larger sizes may be available in some areas. Sodium hypochlorite contains approximately 5-percent to 15-percent available chlorine, but care must be used in control of conditions and length of storage to minimize its deterioration. (Available chlorine is expressed as a percent of weight when the concentration is 5 percent or less, and usually as a percent of volume for higher concentrations. $\text{Percent} \times 10 = \text{grams of available chlorine per litre of hypochlorite.}$)

Sec. 2.3 Calcium Hypochlorite†

Calcium hypochlorite is available in granular form or in approximately 5-g tablets, and contains approximately 65-percent available chlorine by weight. The material should be stored in a cool, dry, and dark environment to minimize its deterioration.

SECTION 3: BASIC DISINFECTION PROCEDURE

The basic disinfection procedure consists of:

1. Preventing contaminating materials from entering the water main during storage, construction, or repair.
2. Removing, by flushing or other means, those materials that may have entered the water main.
3. Chlorinating any residual contamination that may remain, and flushing the chlorinated water from the main.
4. Determining the bacteriological quality by laboratory test after disinfection.

*See AWWA B301—Standard for Liquid Chlorine.
†See AWWA B300—Standard for Hypochlorites.

SECTION 4: PREVENTIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION

Heavy particulates generally contain bacteria and prevent even very high chlorine concentrations from contacting and killing such organisms. It is, therefore, essential that the procedures of this section be observed to assure that a water main and its appurtenances are thoroughly clean for the final disinfection by chlorination.

Sec. 4.1 Keeping Pipe Clean and Dry

Precautions shall be taken to protect the interiors of pipes, fittings, and valves against contamination. Pipe delivered for construction shall be strung so as to minimize entrance of foreign material. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Rodent-proof plugs may be used where it is determined that watertight plugs are not practicable and where thorough cleaning will be performed by flushing or other means.

Delay in placement of delivered pipe invites contamination. The more closely the rate of delivery is correlated to the rate of pipe laying, the less likelihood of contamination.

Sec. 4.2 Joints

Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.

Sec. 4.3 Packing Materials

Yarning or packing material shall consist of molded or tubular rubber rings, or rope of treated paper or other approved materials. Materials such as jute or hemp shall not be used. Packing material shall be handled in a manner that avoids contamination. If asbestos rope is used, it shall be handled in a manner that prevents asbestos from being introduced into the water-carrying portion of the pipe.

Sec. 4.4 Sealing Materials

No contaminated material or any material capable of supporting prolific growth of microorganisms shall be used for sealing joints. Sealing material or gaskets shall be handled in a manner that avoids contamination. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. It shall be delivered to the job in closed containers and shall be kept clean.

Sec. 4.5 Cleaning and Swabbing

If dirt enters the pipe, and in the opinion of the owner's engineer or job superintendent the dirt will not be removed by the flushing operation, the interior of the pipe shall be cleaned by mechanical means and then shall be swabbed with a 1-percent hypochlorite disinfecting solution. Cleaning with the use of a pig, swab, or "go-devil" should be undertaken only when the owner's engineer or job superintendent has determined that such operation will not force mud or debris into pipe-joint spaces.

Sec. 4.6 Wet-Trench Construction

If it is not possible to keep the pipe and fittings dry during installation, every effort shall be made to assure that any of the water that may enter the pipe-joint spaces contains an available-chlorine concentration of approximately 25 mg/L. This may be accomplished by adding calcium hypochlorite granules or tablets to each length of pipe before it is lowered into a wet trench, or by treating the trench water with hypochlorite tablets.

Sec. 4.7 Flooding by Storm or Accident During Construction

If the main is flooded during construction, it shall be cleared of the flood water by draining and flushing with potable water until the main is clean. The section exposed to the flood water shall then be filled with a chlorinated potable water that, at the end of a 24-h holding period, will have a free chlorine residual of not less than 25 mg/L. The chlorinated water may then be drained or flushed from the main. After construction is completed, the main shall be disinfected using the continuous-feed or slug method.

SECTION 5: METHODS OF CHLORINATION

Three methods of chlorination are explained in this section: tablet, continuous feed, and slug. Information in the foreword will be helpful in determining the method to be used. The tablet method gives an average chlorine dose of approximately 25 mg/L; the continuous-feed method gives a 24-h chlorine residual of not less than 10 mg/L; and the slug method gives a 3-h exposure of not less than 50 mg/L free chlorine.

Sec. 5.1 Tablet Method

The tablet method consists of placing calcium hypochlorite granules and tablets in the water main as it is being installed and filling the main with potable water when installation is completed.

This method may be used only if the pipes and appurtenances are kept clean and dry during construction.

5.1.1 Placing of calcium hypochlorite granules. During construction, calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-ft intervals. The quantity of granules shall be as shown in Table 1.

WARNING: This procedure must not be used on solvent-welded plastic or on screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

Table 1 Ounces of Calcium Hypochlorite Granules to be Placed at Beginning of Main and at Each 500-ft Interval

Pipe Diameter in.	Calcium Hypochlorite Granules oz
4	0.5
6	1.0
8	2.0
12	4.0
16 and larger	8.0

5.1.2 Placing of calcium hypochlorite tablets. During construction, 5-g calcium hypochlorite tablets shall be placed in each section of pipe and also one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenance. The number of 5-g tablets required for each pipe section shall be $0.0012d^2L$ rounded to the next higher integer, where d is the inside pipe diameter, in inches, and L is the length of the pipe section, in feet. Table 2 shows the number of tablets required for commonly used sizes of pipe. The tablets shall be

Table 2 Number of 5-g Calcium Hypochlorite Tablets Required for Dose of 25 mg/L*

Pipe Diameter in.	Length of Pipe Section ft				
	13 or less	18	20	30	40
	Number of 5-g Calcium Hypochlorite Tablets				
4	1	1	1	1	1
6	1	1	1	2	2
8	1	2	2	3	4
10	2	3	3	4	5
12	3	4	4	6	7
16	4	6	7	10	13

*Based on 3.25 g available chlorine per tablet; any portion of tablet rounded to next higher number.

attached by an adhesive such as Permatex No. 1* or equal. There shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all the tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length. If the tablets are attached before the pipe section is placed in the trench, their position shall be marked on the section so it can be readily determined that the pipe is installed with the tablets at the top.

5.1.3 *Filling and contact.* When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity no greater than 1 ft/s. Precautions shall be taken to assure that air pockets are eliminated. This water shall remain in the pipe for at least 24 h. If the water temperature is less than 41°F (5°C), the water shall remain in the pipe for at least 48 h. Valves shall be positioned so that the strong chlorine solution in the treated main will not flow into water mains in active service.

Sec. 5.2 Continuous-Feed Method

The continuous-feed method consists of placing calcium hypochlorite granules in the main during construction (optional), completely filling the main to remove all air pockets, flushing the completed main to remove particulates, and filling the main with potable water chlorinated so that after a 24-h holding period in the main there will be a free chlorine residual of not less than 10 mg/L.

5.2.1 *Placing calcium hypochlorite granules.* At the option of the engineer, calcium hypochlorite granules shall be placed in pipe sections as specified in Sec. 5.1.1. The purpose of this procedure is to provide a strong chlorine concentration in the first flow of flushing water that flows down the main. This procedure is recommended particularly where the type of pipe is such that this first flow of water will flow into annular spaces at pipe joints.

5.2.2 *Preliminary flushing.* Before being chlorinated, the main shall be filled to eliminate air pockets and shall be flushed to remove particulates. The flushing velocity in the main shall not be less than 2.5 ft/s unless the owner's engineer or job superintendent determines that conditions do not permit the required flow to be discharged to waste. Table 3 shows the rates of flow required to produce a velocity of 2.5 ft/s in pipes of various sizes. Note that flushing is no substitute for preventive measures during construction. Certain contaminants, such as caked deposits, resist flushing at any feasible velocity.

In mains of 24-in. or larger diameter, an acceptable alternative to flushing is to broom-sweep the main, carefully removing all sweepings prior to chlorinating the main.

*A product of the Permatex Co., Brooklyn, N.Y., and Kansas City, Kan.

Table 4 Chlorine Required to Produce 25-mg/L Concentration in 100 ft of Pipe—
by Diameter

Pipe Diameter <i>in</i>	100-percent Chlorine <i>lb</i>	1-percent Chlorine Solution <i>gal</i>
4	.013	.16
6	.030	.36
8	.054	.65
10	.085	1.02
12	.120	1.44
16	.217	2.60

Table 4 gives the amount of chlorine required for each 100 ft of pipe of various diameters. Solutions of 1-percent chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires 1 lb of calcium hypochlorite in 8 gal of water.

3. During the application of chlorine, valves shall be positioned so that the strong chlorine solution in the main being treated will not flow into water mains in active service. Chlorine application shall not cease until the entire main is filled with heavily chlorinated water. The chlorinated water shall be retained in the main for at least 24 h, during which time all valves and hydrants in the treated section shall be operated to ensure disinfection of the appurtenances. At the end of this 24-h period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L free chlorine.

4. Direct-feed chlorinators, which operate solely from gas pressure in the chlorine cylinder, shall not be used for application of liquid chlorine. (The danger of using direct-feed chlorinators is that water pressure in the main can exceed gas pressure in the chlorine cylinder. This allows a backflow of water into the cylinder, resulting in severe cylinder corrosion and escape of chlorine gas.) The preferred equipment for applying liquid chlorine is a solution-feed, vacuum-operated chlorinator and a booster pump. The vacuum-operated chlorinator mixes the chlorine gas in solution water; the booster pump injects the chlorine-gas solution into the main to be disinfected. Hypochlorite solutions may be applied to the water main with a gasoline or electrically powered chemical-feed pump designed for feeding chlorine solutions. Feed lines shall be of such material and strength as to safely withstand the corrosion caused by the concentrated chlorine solutions and the maximum pressures that may be created by the pumps. All connections shall be checked for tightness before the solution is applied to the main.

Sec. 5.3 Slug Method

The slug method consists of placing calcium hypochlorite granules in the main during construction, completely filling the main to eliminate all air pockets, flushing the main to remove particulates, and slowly flowing through the main a slug of water dosed with chlorine to a concentration of 100 mg/L. The slow flow ensures that all parts of the main and its appurtenances will be exposed to the highly chlorinated water for a period of not less than 3 h.

5.3.1 *Placing calcium hypochlorite granules.* Same as Sec. 5.2.1.

5.3.2 *Preliminary flushing.* Same as Sec. 5.2.2.

5.3.3 *Chlorinating the main.*

1. Same as Sec. 5.2.3(1).

2. At a point not more than 10 ft downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 100 mg/L free chlorine. To ensure that this concentration is

provided, the chlorine concentration should be measured at regular intervals. The chlorine shall be applied continuously and for a sufficient period to develop a solid column, or "slug," of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 100 mg/L for at least 3 h.

3. The free chlorine residual shall be measured in the slug as it moves through the main. If at any time it drops below 50 mg/L, the flow shall be stopped, chlorination equipment shall be relocated at the head of the slug, and, as flow is resumed, chlorine shall be applied to restore the free chlorine in the slug to not less than 100 mg/L.

4. As the chlorinated water flows past fittings and valves, related valves and hydrants shall be operated so as to disinfect appurtenances and pipe branches.

SECTION 6: FINAL FLUSHING

Sec. 6.1 Clearing the Main of Heavily Chlorinated Water

After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

Sec. 6.2 Disposing of Heavily Chlorinated Water

The environment to which the chlorinated water is to be discharged shall be inspected. If there is any question that the chlorinated discharge will cause damage to the environment, then a reducing agent shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water. (See Appendix B for neutralizing chemicals.) Where necessary, federal, state, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

SECTION 7: BACTERIOLOGICAL TESTS

Sec. 7.1 Standard Conditions

After final flushing and before the water main is placed in service, a sample or samples shall be collected from the end of the line, shall be tested for bacteriological quality in accordance with *Standard Methods for the Examination of Water and Wastewater*, and shall show the absence of coliform organisms. A standard plate count may be required at the option of the engineer. At least one sample shall be collected from the new main and one from each branch. In case of extremely long mains, it is desirable that samples be collected along the length of the line as well as at its end.

Sec. 7.2 Special Conditions

If, during construction, trench water has entered the main, or if in the opinion of the owner's engineer or job superintendent, excessive quantities of dirt or debris have entered the main, bacteriological samples shall be taken at intervals of approximately 200 ft and shall be identified by location. Samples shall be taken of water that has stood in the main for at least 16 h after final flushing has been completed.

Sec. 7.3 Sampling Procedure

Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate as required by *Standard Methods for the Examination of Water and*

Wastewater. No hose or fire hydrant shall be used in collection of samples. A suggested combination blowoff and sampling tap useful for mains up to and including 8-in. diameter is shown in Figure 1. A corporation cock may be installed in the main with a copper-tube gooseneck assembly. After samples have been collected, the gooseneck assembly may be removed and retained for future use.

SECTION 8: REDISINFECTION

If the initial disinfection fails to produce satisfactory bacteriological samples, the main may be refushed and shall be resampled. If check samples show the presence of coliform organisms, then the main shall be rechlorinated by the continuous-feed or slug method of chlorination until satisfactory results are obtained.

NOTE: High velocities in the existing system, resulting from flushing the new main, may disturb sediment that has accumulated in the existing mains. When check samples are taken, it is well to sample water entering the new main.

SECTION 9: DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

The following procedures apply primarily when mains are wholly or partially dewatered. After the appropriate procedures have been completed, the main may be returned to service prior to completion of bacteriological testing in order to minimize the time customers are out of water. Leaks or breaks that are repaired with clamping devices while the mains remain full of pressurized water present little danger of contamination and require no disinfection.

Sec. 9.1 Trench Treatment

When an old main is opened, either by accident or by design, the excavation will likely be wet and may be badly contaminated from nearby sewers. Liberal quantities of hypochlorite applied to open trench areas will lessen the danger from such pollution. Tablets have the advantage in such a situation because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation.

Sec. 9.2 Swabbing with Hypochlorite Solution

The interiors of all pipe and fittings (particularly couplings and sleeves) used in making the repair shall be swabbed or sprayed with a 1-percent hypochlorite solution before they are installed.

Sec. 9.3 Flushing

Thorough flushing is the most practical means of removing contamination introduced during repairs. If valve and hydrant locations permit, flushing toward the work location from both directions is recommended. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.

Sec. 9.4 Slug Chlorination

Where practical, in addition to the procedures above, a section of main in which the break is located shall be isolated, all service connections shut off, and the section flushed and chlorinated as described in Sec. 5.3, except that the dose may be increased to as much as

300 mg/L and the contact time reduced to as little as 15 min. After chlorination, flushing shall be resumed and continued until discolored water is eliminated and the water is free of noticeable chlorine odor.

Sec. 9.5 Sampling

Bacteriological samples shall be taken after repairs are completed to provide a record for determining the procedure's effectiveness. If the direction of flow is unknown, samples shall be taken on each side of the main break. If positive bacteriological samples are recorded, the situation shall be evaluated by a qualified engineer who can determine corrective action, and daily sampling shall be continued until two consecutive negative samples are recorded.

SECTION 10: SPECIAL PROCEDURE FOR CAULKED TAPPING SLEEVES

Before a tapping sleeve is installed, the exterior of the main to be tapped shall be thoroughly cleaned, and the interior surface of the sleeve shall be lightly dusted with calcium hypochlorite powder.

Tapping sleeves are used to avoid shutting down the main to be tapped. After the tap is made, it is impossible to disinfect the annulus without shutting down the main and removing the sleeve. The space between the tapping sleeve and the tapped pipe is normally $\frac{1}{8}$ in., more or less, so that as little as 100 mg of calcium hypochlorite powder per square foot will provide a chlorine concentration of over 50 mg/L.

APPENDIX A

Chlorine Residual Testing

This appendix is for information only and is not a part of AWWA C651.

SECTION A.1: DPD DROP DILUTION METHOD (FOR FIELD TEST)

The DPD drop dilution method of approximating total residual chlorine is suitable for concentrations above 10 mg/L, such as are applied in the disinfection of water mains or tanks.

Apparatus:

1. A graduated cylinder for measuring distilled water.
2. An automatic or safety pipette.
3. Two dropping pipettes that deliver a 1-mL sample in 20 drops. One pipette is for dispensing the water sample and the other is for dispensing the DPD and buffer solutions. The pipettes should not be interchanged.
4. A comparator kit containing a suitable range of standards.

Reagents:

1. DPD indicator solution. Prepare as prescribed in *Standard Methods for the Examination of Water and Wastewater*, (16th ed.), Section 408E, p. 309.
2. Phosphate buffer solution. Prepare as prescribed in *Standard Methods for the Examination of Water and Wastewater*, (16th ed.), Section 408E, p. 309.

Procedure:

1. Add 10 drops of DPD solution and 10 drops of buffer solution (or 20 drops of combined DPD-buffer solution) to a comparator cell.
2. Fill the comparator cell to the 10-mL mark with distilled water.
3. With a dropping pipette, add the water sample one drop at a time, allowing mixing, until a red color is formed that matches one of the color standards.
4. Record the total number of drops used and the final chlorine reading obtained (that is, the chlorine reading of the matched standard).
5. Calculate the milligrams per litre of free residual chlorine as follows:

$$\text{mg/L Chlorine} = \frac{\text{reading} \times 200}{\text{drops of sample}}$$

SECTION A.2: HIGH-RANGE CHLORINE TEST KITS

Several manufacturers produce high-range chlorine test kits that are inexpensive, easy to use, and satisfactory for the precision required.

APPENDIX B

Disposal of Heavily Chlorinated Water

This appendix is for information only and is not a part of AWWA C651.

1. Check with local sewer department for conditions of disposal to sanitary sewer.
2. Chlorine residual of water being disposed will be neutralized by treating with one of the chemicals listed in Table B.1.

Table B.1 Pounds of Chemicals Required to Neutralize Various Residual Chlorine Concentrations in 100 000 gal of Water*

Residual Chlorine Concentration mg/L	Sulfur Dioxide (SO ₂)	Sodium Bisulfate (NaHSO ₃)	Sodium Sulfitc (Na ₂ SO ₃)	Sodium Thiosulfate (Na ₂ S ₂ O ₃ •5H ₂ O)
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
50	41.7	62.6	73.0	60.0

*Except for residual chlorine concentration, all amounts are in pounds.

SECTION TEN
PERMITS AND APPROVALS

SECTION	DESCRIPTION	PAGE
1	KYDOH Encroachment Permit	PA-1
2	Approval of Sanitary Features of Design	PA-2

KYDOH Encroachment Permit

Approval of Sanitary Features of Design

SECTION ELEVEN

PREVAILING WAGE REQUIREMENTS

SECTION	DESCRIPTION	PAGE
1	State Prevailing Wage Request	L-1
2	Request For Determination and Response to Request	L-2

B-2

STATE PREVAILING WAGE REQUEST

Notification of Public Works Project

DATE: _____

Commissioner
Kentucky Department of Labor
Employment Standards and Mediation
Building #127
Frankfort, Kentucky 40601

The Kentucky Revised Statutes 337.510 states that before advertising for bids or entering into any contract for construction of public works, every public authority shall notify the department in writing of the specific public work to be constructed and shall ascertain from the department the prevailing rates of wages of laborers, workmen, mechanics, helpers, and apprentices for the class of work called for in the construction of such public works in the locality where the work is to be performed.

Please be advised of the following:

COMMUNITY: Floyd County

PUBLIC AUTHORITY: Beaver Elkhorn Water District

ADVERTISING DATE: Summer 1999

PROJECT: Bill Hall Branch Water Line Extension

LOCATION: McDowell, Kentucky

TYPE OF PROJECT: _____
BUILDING _____
HEAVY OR HIGHWAY X
RESIDENTIAL _____

SPECIFIC DESCRIPTION OF PROJECT: Contract 1 - 11,940 LF of 4" water line, 20,000 Gal. Skid Tank, 42 meter sets. Contract 2 - 1 water booster pump station Contract 3 - Telemetry

APPROXIMATE COST: \$264,000

ARE FEDERAL FUNDS BEING USED: Yes X No _____

HAS FEDERAL LAW ESTABLISHED WAGE RATES AND FILING REQUIREMENTS FOR THIS PROJECT: Yes X No _____

DATES OF CONSTRUCTION: Summer 99

Please send the current prevailing wage schedule for the above Community to the following person:

NAME & TITLE: Kevin M. Howard, P.E.

ADDRESS: 120 Prosperous Place, Suite 101

CITY: Lexington, Kentucky ZIP CODE: 40509

TELEPHONE NUMBER: 606/264-9860

I understand that KRS 337.990, subsection (11), provides that any public authority or member of a public authority who willfully fails to comply with KRS 337.510 shall be fined not more than one hundred dollars for each offense. Each day of violation shall constitute a separate offense. Where a public authority willfully or negligently fails to comply with KRS 337.505 to KRS 337.550 and such failure results in damage, injury or loss to any person, such public authority, public official or member of a public authority may be held liable therefor in a civil action.

Sincerely yours,

Title

U. S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION

REQUEST FOR DETERMINATION
AND RESPONSE TO REQUEST

U. S. DEPARTMENT OF LABOR
EMPLOYMENT STANDARDS ADMINISTRATION

Requesting Officer (typed name and signature)
Kevin M. Howard

Department, Agency, or Bureau
606/264-9860

Date of Request
April 1999

Est. Advertising Date
Summer 1999

Prior Decision Number (if any)
Est. \$ Value of Contract
 Under 1/2 Mil. 1 to 5 Mil. Highway
 1/2 to 1 Mil. Over 5 Mil. Resid. Heavy

Location of Project (city or other description)
McDowell

County
Floyd

State
Kentucky

Project Title:
Bill Hall Branch Water Line Extension

Address to which wage determination should be mailed (Print or type)
Summit Engineering, Inc.
120 Prosperous Place, Suite 101
Lexington, Kentucky 40509

Wago Survey by Agency Attached
 YES NO

Wago Survey by Agency in Progress
 YES NO

Description of Work (Be specific) (Print or type)
11,900 LF rural water line extension with 50 GPM pump station and 20,000 gallon skid tank. Work funded 75% by PRIDE grant administered by USACOE.

FOR DEPARTMENT OF LABOR USE

Response To Request

a. Use area determination issued for this area

b. The attached decision noted below is applicable to this project

Decision Number

Date of Decision

Expires

Supersedes Decision Number

Approved

Requesting Officer (typed name and signature)

Department, Agency, or Bureau

Date of Request

Est. Advertising Date

Prior Decision Number (if any)

Location of Project (city or other description)

County

State

Project Title:

Address to which wage determination should be mailed (Print or type)

Wago Survey by Agency Attached

Wago Survey by Agency in Progress

Description of Work (Be specific) (Print or type)

Requesting Officer (typed name and signature)

Department, Agency, or Bureau

Date of Request

Est. Advertising Date

Prior Decision Number (if any)

Location of Project (city or other description)

County

State

Project Title:

Address to which wage determination should be mailed (Print or type)

Wago Survey by Agency Attached

Wago Survey by Agency in Progress

Description of Work (Be specific) (Print or type)

STANDARD FORM 308 JUNE 1972
U.S. DEPARTMENT OF LABOR
(Part of Subtitle A, Part 5)

OMB# 2501-0005

(THIS REPLACES FORMS DD-11 & DD-11a)

308-102

PAUL E. PATTON
GOVERNOR



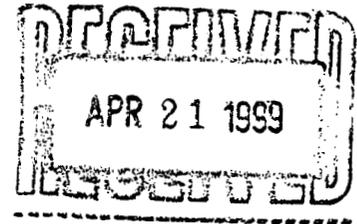
DIVISION OF EMPLOYMENT STANDARDS,
APPRENTICESHIP AND TRAINING

NORSWORTHY
SECRETARY

LABOR CABINET
1047 U S HWY 127 S STE 4
FRANKFORT KY 40601-4381

DENNIS J. LANGFORD
DIRECTOR

April 19, 1999



Mr. Kevin M. Howard
Summit Engineering, Inc.
120 Prosperous Place, Suite 101
Lexington, Kentucky 40509

Re: Beaver Elkhorn Water District
Bill Hall Branch Water Line Extension

Advertising Date as Shown on Notification: Summer, 1999

Dear Mr. Howard:

This office is in receipt of your written notification on the above project as required by KRS 337.510(1).

I am enclosing a copy of the current prevailing wage determination number CR-1-297, dated November 9, 1998, for Floyd County. This schedule of wages shall be attached to and made a part of the specifications for the work, printed on the bidding blanks, and made a part of the contract for the construction of the public works between the public authority and the successful bidder or bidders.

The determination number assigned to this project is based on the date contained in your notification as the date the project is advertised for bids. If this is changed in any way, it will be the responsibility of the public authority to contact this office and reascertain the correct schedule of the prevailing rates of wages.

Your project number is as follows: 071-2-0046-98-1

Respectfully,

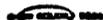
Dennis J. Langford
Director

lprh

Enclosure

TELEPHONE: (502) 564-2784

An Equal Opportunity Employer M/F/D



COMMISSIONER'S CURRENT REVISION
KENTUCKY PREVAILING WAGE DETERMINATION
SENATORIAL DISTRICT NO. 029

NOTICE

Determination No. CR-1-297

THIS DETERMINATION APPLIES TO

Date of Determination: November 9, 1998

PROJECT NO. 071-2-0046-98-1

This schedule of the prevailing rate of wages for Senatorial District No. 029, which includes the counties of Breathitt, Floyd, Johnson, and Knott, has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR-1-297.

Apprentices or trainees shall be permitted to work as such subject to Administrative Regulations adopted by the Commissioner of Workplace Standards. Copies of these regulations will be furnished upon request to any interested person.

Overtime is to be computed at not less than one and one-half (1 1/2) times the indicated BASE RATE for all hours worked in excess of eight (8) per day, or in excess of forty (40) per week. However, KRS 337.540 permits an employee and employer to agree, in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one workday, but not more than ten (10) hours worked in any one workday, if such written agreement is prior to the over eight (8) hours in a workday actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked.

No laborer, workman or mechanic shall be paid at a rate less than that of the General Laborer except those classified as bona fide apprentices registered with the Kentucky State Apprenticeship Supervisor unless otherwise specified in this schedule of wage rates.

Fringe benefit amounts are applicable for all hours worked except when otherwise noted.

CLASSIFICATIONS RATE AND FRINGE BENEFITS

ASBESTOS/INSULATION WORKERS:

Mechanics	BASE RATE	\$22.73
	FRINGE BENEFITS	5.76

Insulation Removers & Hazardous Waste Handlers	BASE RATE	\$11.13
	FRINGE BENEFITS	3.40

BOILERMAKERS	BASE RATE	\$21.75
	FRINGE BENEFITS	8.81

BRICKLAYERS	BASE RATE	\$12.00
-------------	-----------	---------

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

CARPENTERS:

Carpenters

BUILDING

BASE RATE \$17.73
FRINGE BENEFITS 11.32

HEAVY & HIGHWAY

BASE RATE \$17.35
FRINGE BENEFITS 5.55

Piledrivers

BUILDING

BASE RATE \$18.13
FRINGE BENEFITS 11.32

HEAVY & HIGHWAY

BASE RATE \$18.70
FRINGE BENEFITS 4.93

CEMENT MASONS

BASE RATE \$12.00

ELECTRICIANS

BASE RATE \$ 10.61

ELEVATOR CONSTRUCTORS

BASE RATE \$14.61
FRINGE BENEFITS 2.33

ELEVATOR CONSTRUCTOR HELPERS

BASE RATE \$10.23
FRINGE BENEFITS 2.33

GLAZIERS

BASE RATE \$ 8.43

IRONWORKERS:

BUILDING

BASE RATE \$10.00

HEAVY & HIGHWAY

BASE RATE \$18.05
FRINGE BENEFITS 4.80

LABORERS:

BUILDING

BASE RATE \$ 7.68

General laborer, flagman, steam jenny.

HEAVY & HIGHWAY

BASE RATE \$15.40
FRINGE BENEFITS 5.55

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

LABORERS: (Continued)

Hand blade operator, batch truck dumper, deck hand or scow man.

HEAVY & HIGHWAY	BASE RATE	\$15.65
	FRINGE BENEFITS	5.55

Power driven tool operator of the following: wagon drill, chain saw, jack hammer, concrete saw, sand blaster, concrete chipper, pavement breaker, vibrator, power wheelbarrow, power buggy. Sewer pipe layer, bottom men, dry cement handler, concrete rubber, mason tender.

HEAVY & HIGHWAY	BASE RATE	\$15.75
	FRINGE BENEFITS	5.55

Asphalt lute and rakerman, side rail setter.

HEAVY & HIGHWAY	BASE RATE	\$15.80
	FRINGE BENEFITS	5.55

Gunnite nozzle man, gunnite operator.

HEAVY & HIGHWAY	BASE RATE	\$15.90
	FRINGE BENEFITS	5.55

Tunnel laborer (free air).	HEAVY & HIGHWAY	BASE RATE	\$15.95
		FRINGE BENEFITS	5.55

Tunnel mucker (free air).	HEAVY & HIGHWAY	BASE RATE	\$16.00
		FRINGE BENEFITS	5.55

Tunnel miner, blaster and driller (free air).

HEAVY & HIGHWAY	BASE RATE	\$16.35
	FRINGE BENEFITS	5.55

Caisson worker	HEAVY & HIGHWAY	BASE RATE	\$16.90
		FRINGE BENEFITS	5.55

Powderman	HEAVY & HIGHWAY	BASE RATE	\$17.00
		FRINGE BENEFITS	5.55

CLASSIFICATIONS RATE AND FRINGE BENEFITS

LABORERS: (Continued)

Drill operator of percussion type drills which are both powered and propelled by an independent air supply.

	HEAVY & HIGHWAY	BASE RATE	\$18.20
		FRINGE BENEFITS	5.55
MARBLE, TILE & TERRAZZO WORKERS		BASE RATE	\$19.88
		FRINGE BENEFITS	6.30
MARBLE, TILE & TERRAZZO HELPERS		BASE RATE	\$13.68
		FRINGE BENEFITS	2.41
MILLWRIGHTS		BASE RATE	\$18.73
		FRINGE BENEFITS	10.22
PAINTERS:	BUILDING	BASE RATE	\$ 9.36
	HEAVY & HIGHWAY	BASE RATE	\$17.30
		FRINGE BENEFITS	3.80
PIPEFITTERS		BASE RATE	\$10.13
PLUMBERS		BASE RATE	\$10.29
ROOFERS		BASE RATE	\$ 8.85
SHEETMETAL WORKERS		BASE RATE	\$10.97
SPRINKLER FITTERS:	BUILDING	BASE RATE	\$20.44
		FRINGE BENEFITS	6.85
	HEAVY	BASE RATE	20.05
		FRINGE BENEFITS	6.28
SURVEY PARTY OPERATIVES - Rodmen & Instrument men.			
	HEAVY & HIGHWAY	BASE RATE	\$7.21

CLASSIFICATIONS RATE AND FRINGE BENEFITS

TEAMSTERS: BUILDING BASE RATE \$10.50

Truckhelper and warehouseman

HEAVY & HIGHWAY BASE RATE \$15.65
 FRINGE BENEFITS 5.55

Driver, winch truck and A-Frame when used in transporting materials.

HEAVY & HIGHWAY BASE RATE \$15.75
 FRINGE BENEFITS 5.55

Driver, (semi-trailer or pole trailer), driver (dump truck, tandem axle), driver of distributor.

HEAVY & HIGHWAY BASE RATE \$15.85
 FRINGE BENEFITS 5.55

Driver on mixer trucks (all types). HEAVY & HIGHWAY BASE RATE \$15.90
 FRINGE BENEFITS 5.55

Truck mechanic HEAVY & HIGHWAY BASE RATE \$15.95
 FRINGE BENEFITS 5.55

Driver (3 tons and under), tire changer and truck mechanic helper.

HEAVY & HIGHWAY BASE RATE \$15.98
 FRINGE BENEFITS 5.55

Driver on pavement breakers. HEAVY & HIGHWAY BASE RATE \$16.00
 FRINGE BENEFITS 5.55

Driver (over 3 tons), driver (truck mounted rotary drill).

HEAVY & HIGHWAY BASE RATE \$16.19
 FRINGE BENEFITS 5.55

Driver, Euclid and other heavy earth moving equipment and Low Boy.

HEAVY & HIGHWAY BASE RATE \$16.76
 FRINGE BENEFITS 5.55

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

TEAMSTERS: (Continued)

Greaser on greasing facilities.	HEAVY & HIGHWAY	BASE RATE	\$16.85
		FRINGE BENEFITS	5.55

OPERATING ENGINEERS:

Auto patrol, batcher plant, bituminous paver, cableway, central compressor plant, clamshell, concrete mixer (21 cu. ft. or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge operator, dredge engineer, elevating grader and all types of loaders, hoe type machine, hoist (1 drum when used for stack or chimney construction or repair), hoisting engine (2 or more drums), locomotive, motor scraper, carry-all scoop, bulldozer, heavy duty welder, mechanic, orangepeel bucket, piledriver, power blade, motor grader, roller (bituminous), scarifier, shovel, tractor shovel, truck crane, winch truck, push dozer, highlift, fork-lift (regardless of lift height and except when used for masonry construction), all types of boom cats, core drill, hopto, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, pumpcrete, Ross carrier, boom, tail boom, rotary drill, hydro hammer, mucking machine, rock spreader attached to equipment, scoopmobile, KeCal loader, tower cranes (French, German and other types), hydro-crane, backfiller, gurries, sub-grader, tunnel mining machines including moles, shields, or similar types of tunnel mining equipment.

BUILDING	*BASE RATE	\$20.68
	FRINGE BENEFITS	6.02

Cable Crane Operators (50-ton and over).
Hydraulic crane (100-ton and over)

BUILDING	*BASE RATE	\$21.20
	FRINGE BENEFITS	6.02

All air compressors (over 900 CFM), bituminous mixer, joint sealing machine, concrete mixer (under 21 cu. ft.), form grader, roller (rock), tractor (50 HP and over), bull float, finish machine, outboard motor boat, flexplane, fireman, boom type tamping machine, truck crane oiler, greaser on grease facilities servicing heavy equipment, switchman or brakeman, mechanic helper, whirley oiler, self-propelled compactor, tractair and road widening trencher and farm tractor with attachments (except backhoe, highlift and endloader), elevator (regardless of ownership when used for hoisting any building materials), hoisting engine (1 drum or buck hoist), forklift (when used for masonry construction, Firebrick masonry excluded), well points, grout pump, throttle-valve man, tugger, electric vibrator compactor.

BUILDING	BASE RATE	\$17.86
	FRINGE BENEFITS	6.02

CLASSIFICATIONS RATE AND FRINGE BENEFITS
 OPERATING ENGINEERS: (Continued)

Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, roller (earth), tamping machine, tractors (under 50 HP), vibrator, oiler, concrete saw, burlap and curing machine, hydro-seeder, power form handling equipment, deckhand steersman, hydraulic post driver, and drill helper.

BUILDING	BASE RATE	\$17.06
	FRINGE BENEFITS	6.02

Auto patrol, batcher plant, bituminous paver, cable-way, clamshell, concrete mixer (21 cu. ft. or over), concrete pump, crane, crusher plant, derrick, derrick boat, ditching and trenching machine, dragline, dredge engineer, elevator (regardless of ownership when used for hoisting any building material), elevating grader and all types of loaders, hoe-type machine, hoisting engine, locomotive, LeTourneau or carry-all scoop, bulldozer, mechanic, orangepeel bucket, piledriver, power blade, roller (bituminous), roller (earth), scarifier, shovel, tractor shovel, truck crane, well points, winch truck, push dozer, grout pump, high lift, fork lift (regardless of lift height), all types of boom cats, multiple operator, core drill, tow or push boat, A-Frame winch truck, concrete paver, gradeall, hoist, hyster, material pump, pumpcrete, ross carrier, sheep foot, sideboom, throttle-valve man, rotary drill, power generator, mucking machine, rock spreader attached to equipment, scoopmobile, KeCal loader, tower cranes (French, German and other types), hydrocrane, tugger, backfiller guries, subgrader, electric vibrator compactor, welderburner.

HEAVY & HIGHWAY	BASE RATE	\$18.75
	FRINGE BENEFITS	5.55

All air compressors (200 cu. ft. per min. or greater capacity), bituminous mixer, concrete mixer (under 21 cu. ft.), welding machine, form grader, roller (rock), tractor (50 H.P. and over), bull float, finish machine, outboard motor boat, flexplane, fireman, boom type tamping machine, truck crane oiler, switchman or brakeman, mechanic helper, whirly oiler, self-propelled compactor, tractair and road widening trencher.

HEAVY & HIGHWAY	BASE RATE	\$16.50
	FRINGE BENEFITS	5.55

Greaser on grease facilities servicing heavy equipment.

HEAVY & HIGHWAY	BASE RATE	\$16.85
	FRINGE BENEFITS	5.55

Bituminous distributor, cement gun, conveyor, mud jack, paving joint machine, pump, tamping machine, tractors (under 50 H.P.), vibrator, oiler, air compressors (under 200 cu. ft. per min. capacity), concrete saw, burlap and curing machine, hydro seeder, power form handling equipment, deckhand oiler, hydraulic post driver.

HEAVY & HIGHWAY	BASE RATE	\$16.26
	FRINGE BENEFITS	5.55

CLASSIFICATIONS

RATE AND FRINGE BENEFITS

*Operators on cranes with boom 150' and over, including jib, shall receive fifty cents (\$.50) above Base Rate.

Employees assigned to work below ground level are to be paid ten percent (10%) above basic wage rate. This does not apply to open cut work.

WELDERS - Receive rate for craft in which welding is incidental.

NOTE: The type of construction shall be determined by applying the following definitions.

BUILDING CONSTRUCTION

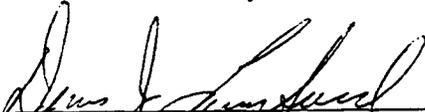
Building construction is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes all construction of such structures, the installation of utilities and the installation of equipment, both above and below grade level, as well as incidental grading, utilities and paving.

HIGHWAY CONSTRUCTION

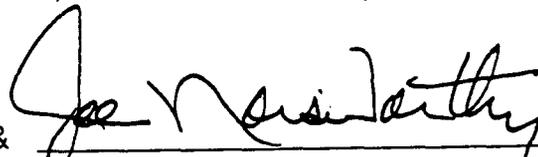
Highway construction includes the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction. It includes all incidental construction in conjunction with the highway construction project.

HEAVY CONSTRUCTION

Heavy projects are those projects that are not properly classified as either "building" or "highway". For example, dredging projects, water and sewer line projects, dams, flood control projects, sewage treatment plants and facilities, and water treatment plants and facilities are considered heavy.



Dennis J. Langford, Director
Employment Standards,
Apprenticeship & Training
Kentucky Labor Cabinet

& 

Joe Norsworthy, Secretary
Kentucky Labor Cabinet
Frankfort, Kentucky 40601

This 9th day of November, 1998.

Bill E

x:\97 - 99 Civil\99-505 HALL BRANCH WATER (BEAVER)\Drawings-Allison\COVER.dwg Tue Apr 13 09:45:34 1999 -A.H.



Beaver - Elkhorn Bill Hall Branch Water

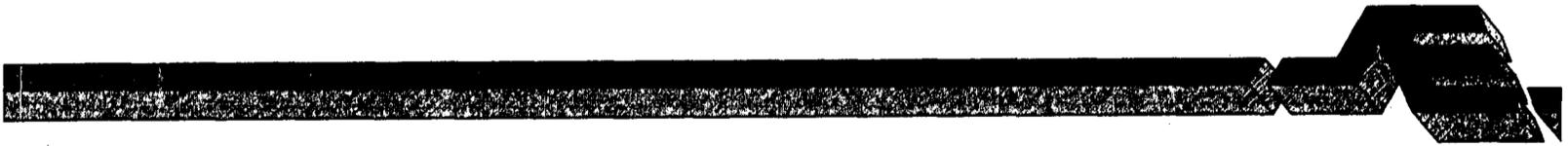
Floyd County,

Contract No. 1 - Pipe Ex

Contract No. 2 - Hall Bra

Contract No. 3 - Teleme

PLANS PREPARED



SUMMIT ENGINEERING

orn Water District Water Line Extension

nty, Kentucky

Pipe Extension and Skid Tank

Hall Branch Pump Station

Telemetry

Inde

General

Cover

Key Map

Master Legend and General Notes

Contract No. 1 – Hall Branch Extension

Mainline Water Extension

Pump Stations

Contract 2 – Halls Branch Pump S

Water Storage Tanks

Contract 1 – Halls Branch Skid Tan

Contract 1 – Halls Branch Skid Tan

Contracts 1 & 2 – Utility Installation [

Excavating, Bedding, and Backfilling

Pipe Encasement, Stream Crossings,

Water Service Connections and Appu

General

- Cover
- Key Map
- Master Legend and General Notes

Contract No. 1 – Hall Branch Extension
Mainline Water Extension

Pump Stations

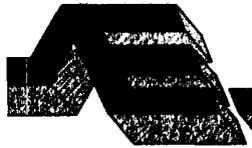
- Contract 2 – Halls Branch Pump S

Water Storage Tanks

- Contract 1 – Halls Branch Skid Tar
- Contract 1 – Halls Branch Skid Tar

Contracts 1 & 2 – Utility Installation I
Excavating, Bedding, and Backfilling
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Water Service Connections and Appu

PREPARED BY



ENGINEERING, INC.

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RECEIVED

JUN 15 1999

PUBLIC SERVICE
COMMISSION

99-242

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PLAN

MIT

1999



Key Map



SUMMIT
ENGINEERING
INC.

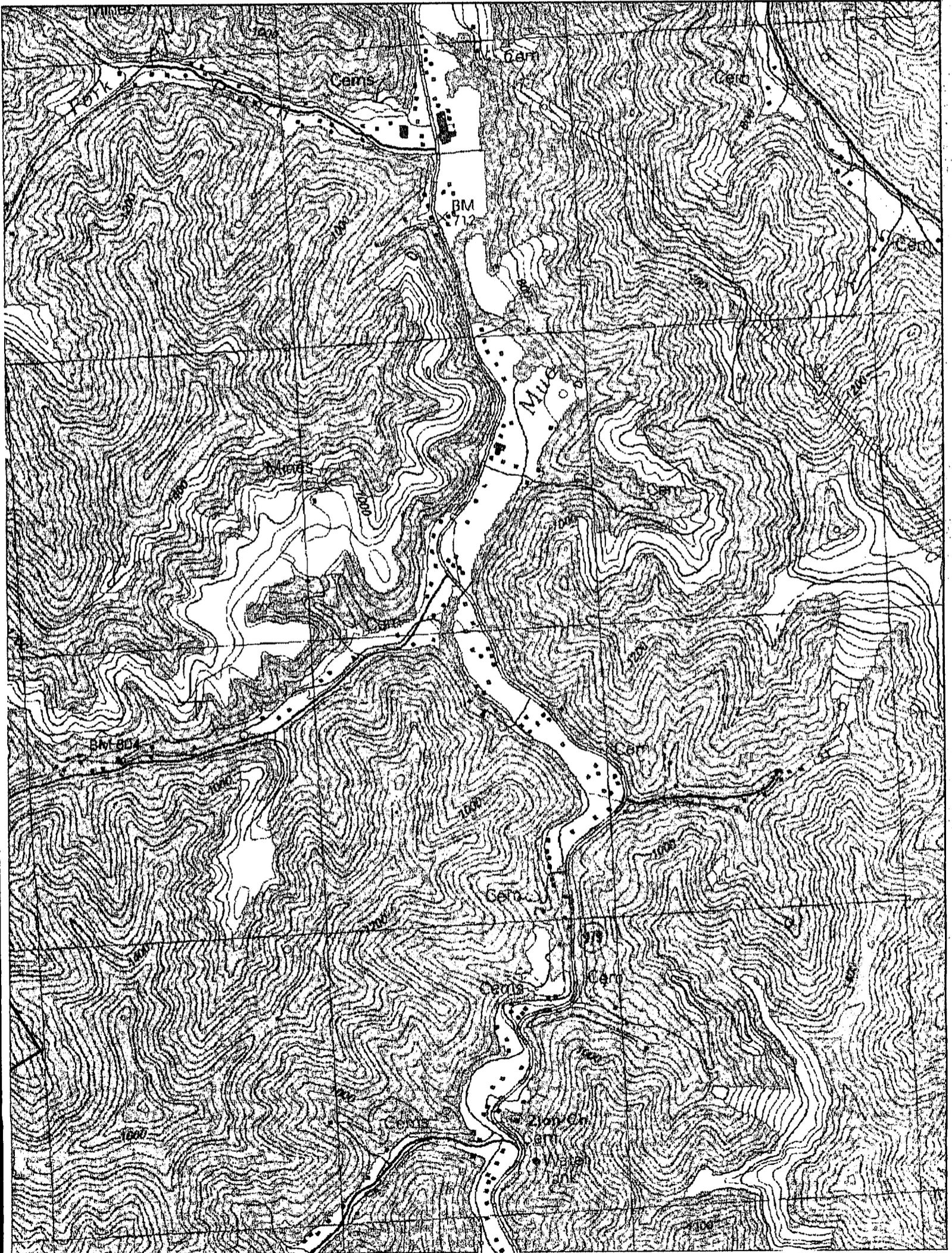
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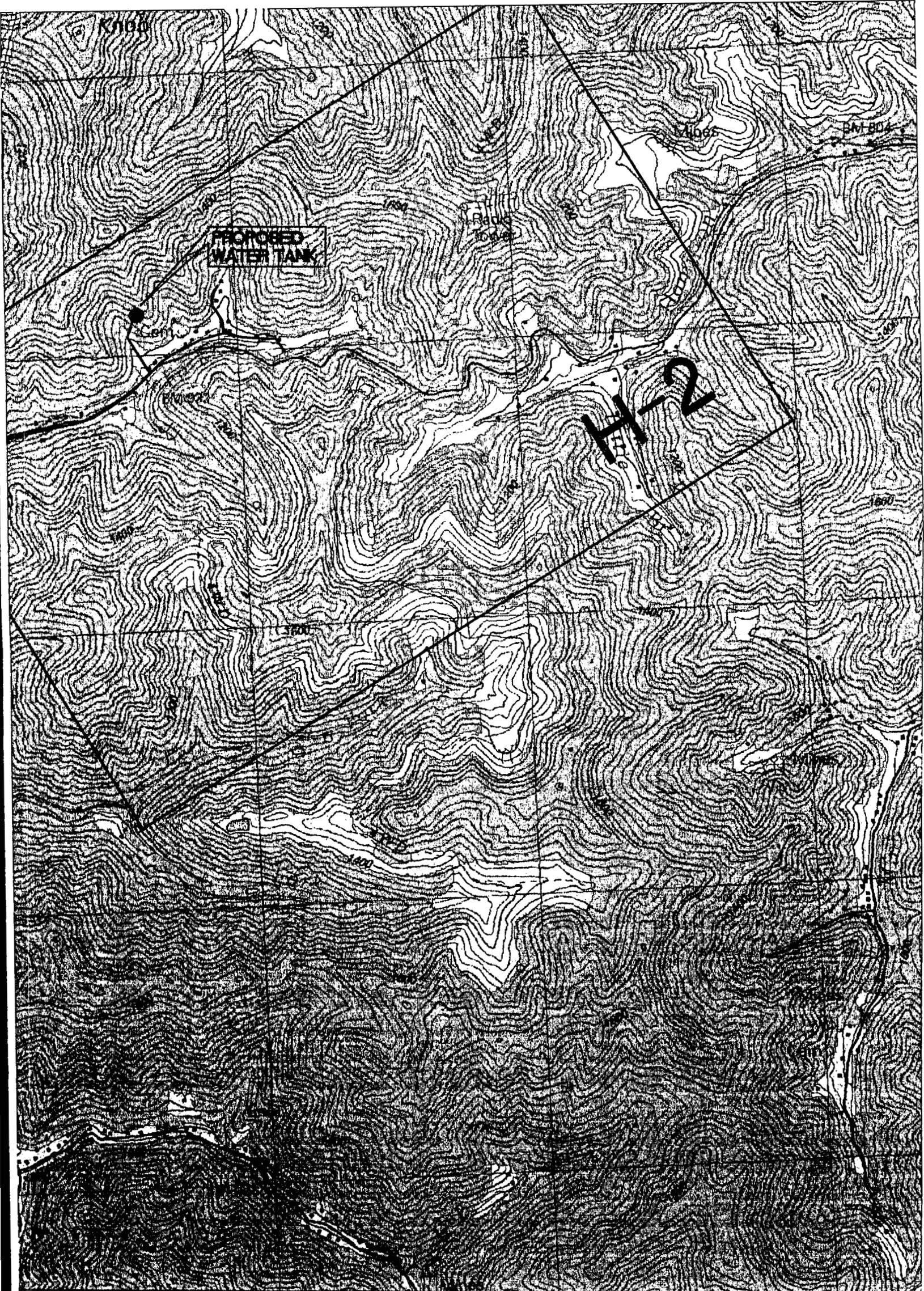
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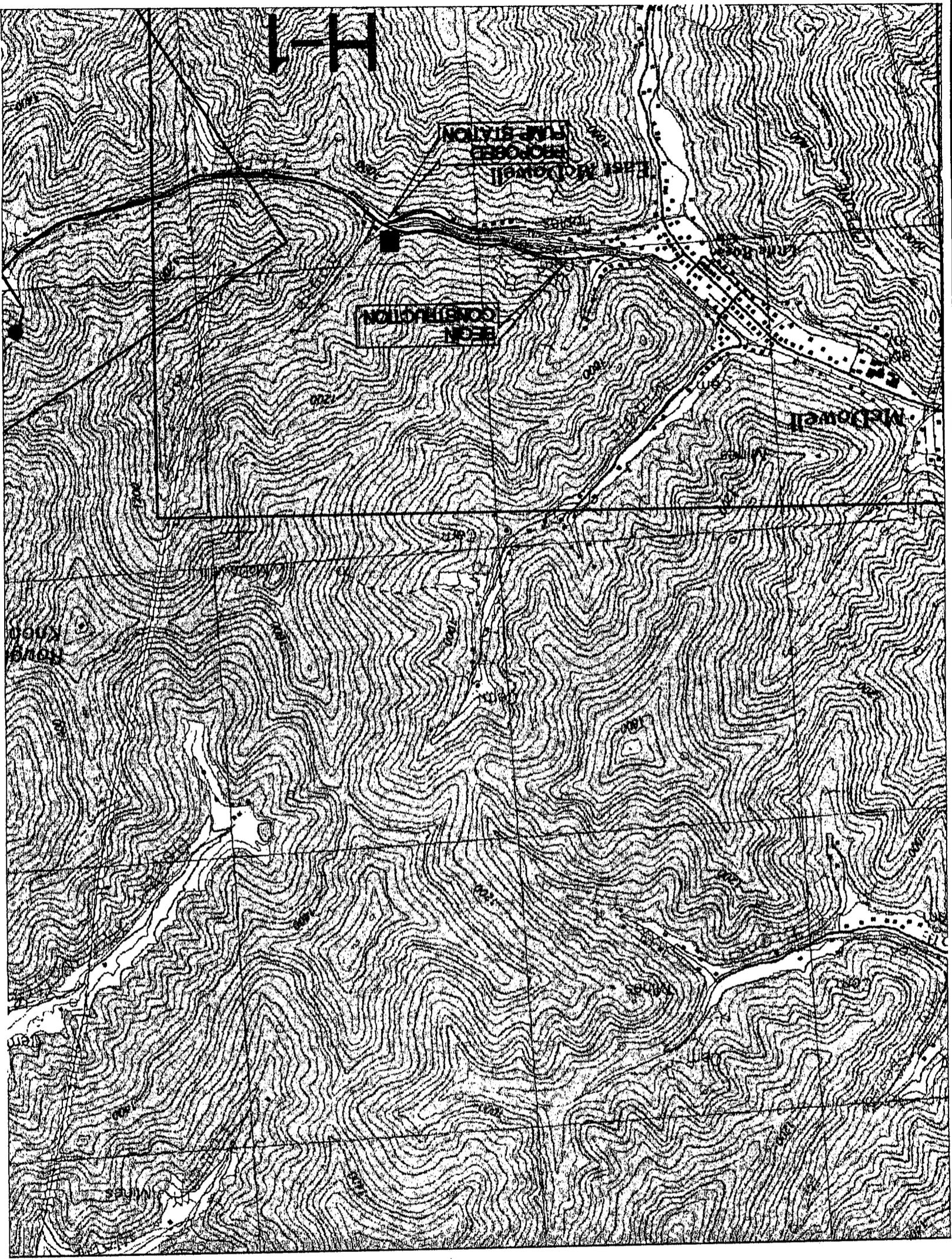
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Beaver-Elkhorn Water District
HALL BRANCH WATER LINE EXTENSION

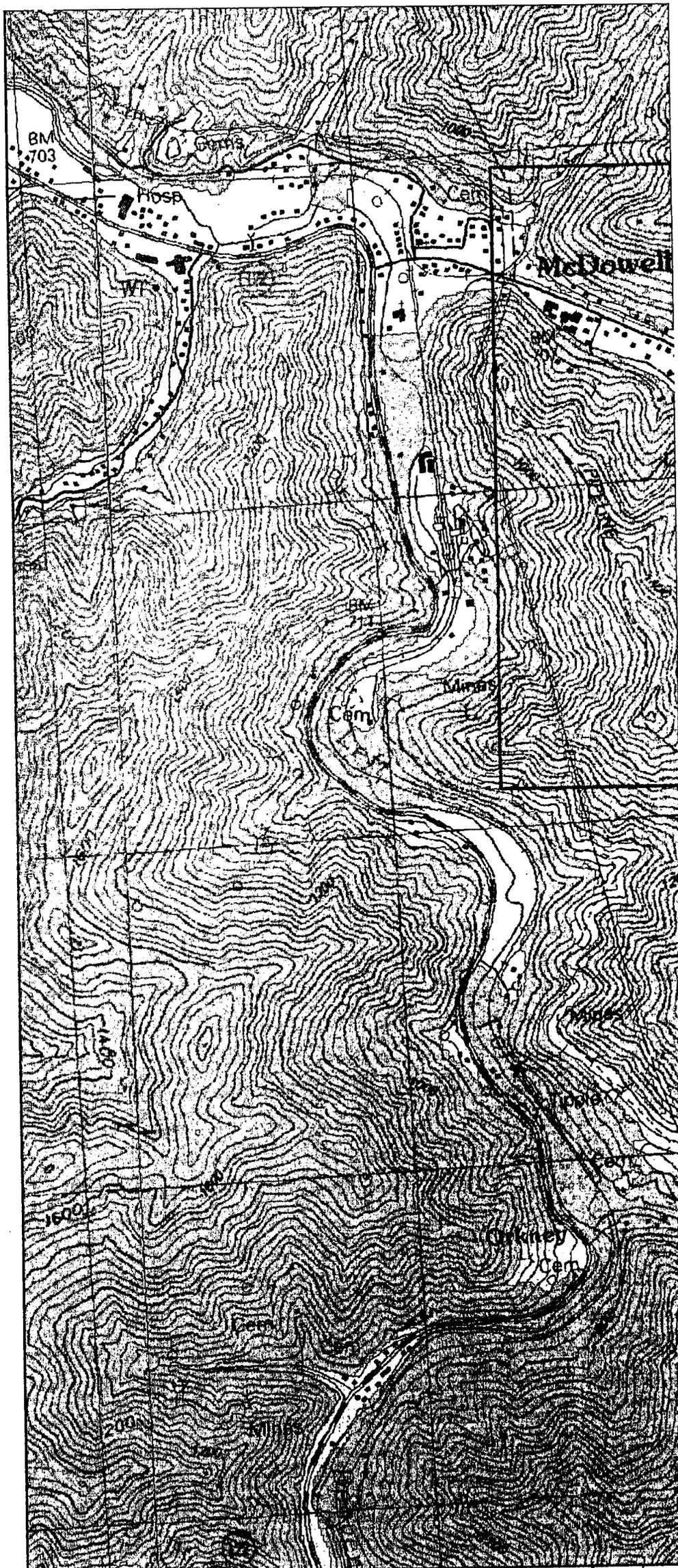
Floyd County, Kentucky



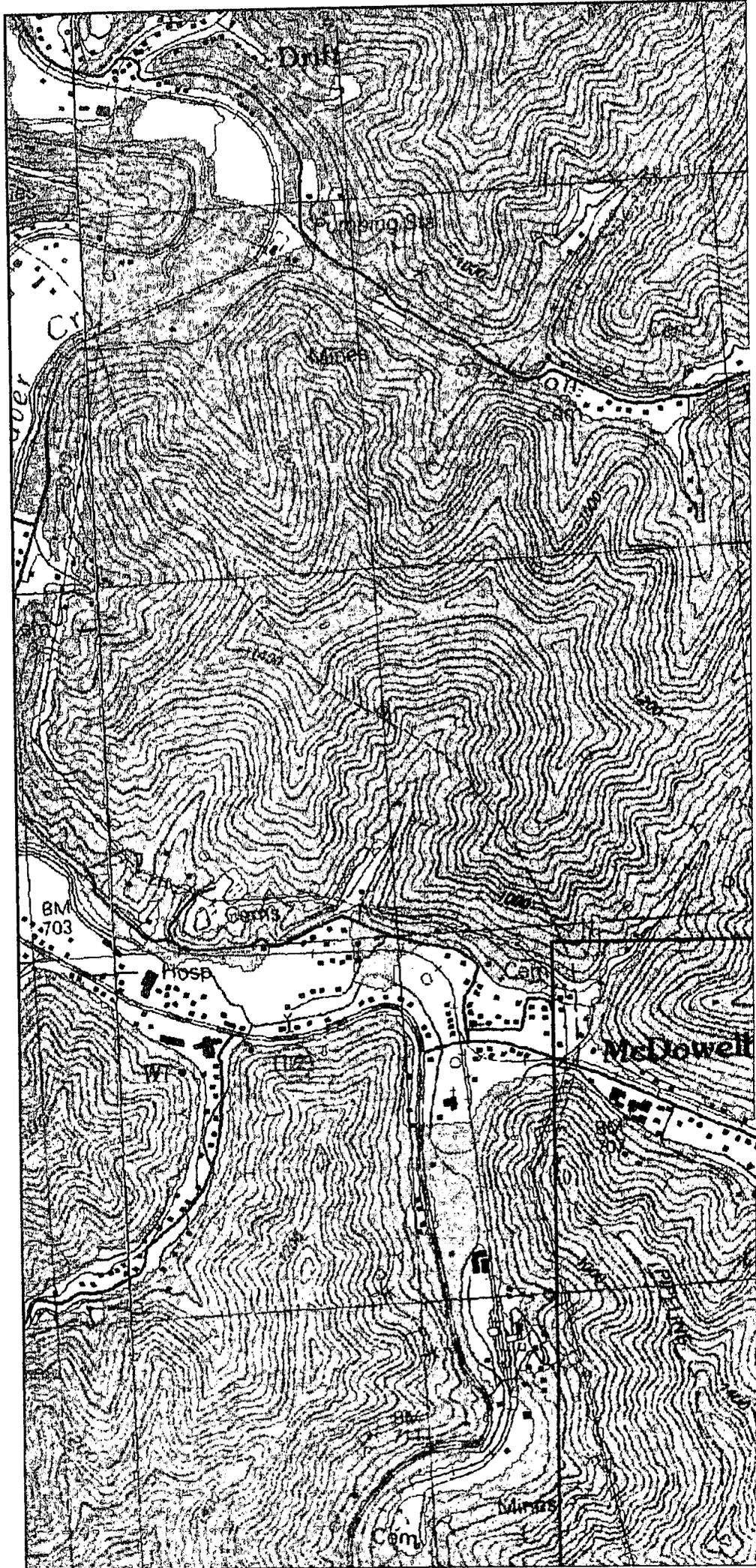


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x:\97 - 99 Civil\99-505 HALL BRANCH WATER (BEAVER)\bill hall branch water line extension\hall key map.dwg Tue Apr 13 16:39:24 1999 -A.H.



DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESC



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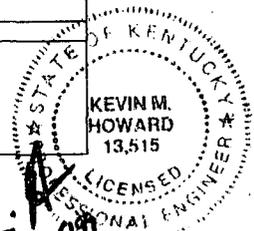
forms of signs, flashers, barricades, etc. The
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ental shrubbery and tree branches shall be
 ceive damage to branches shall be trimmed
 ng damage from equipment shall be treated

ABBREVIATIONS

Abbr.	Miscellaneous
BW	Bottom of Wall
FL	Flow Line
IE	Inlet Elevation
OE	Outlet Elevation
TC	Top of Concrete
TG	Top of Grate
TOT	Top of Tank
TP	Top of Pavement
TS	Top of Sidewalk
TW	Top of Wall
Appurtenances	
CBI	Curb Box Inlet
CO	Clean Out
DBI	Drop Box Inlet
DS	Down Spout
FH	Fire Hydrant
MH	Man Hole
Pipe	
BCCMP	Bituminous Coated Corrugated Metal Pipe
CMP	Corrugated Metal Pipe
CPEP	Corrugated Polyethylene Pipe
DI	Ductile Iron
PVC	Polyvinyl Chloride Pipe
SICPEP	Smooth Interior Corrugated Polyethylene Pipe
Utilities	
PP	Power Pole
SS	Sanitary Sewer
ST	Storm Sewer



Legend and General Notes



SUMMIT
 ENGINEERING
 INC.

PIKEVILLE, KY
 LEXINGTON, KY
 GRUNDY, VA
 LOGAN, WV

SCALE: N.T.S. DATE: 4/14/99

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OF:

DRAWING NO.

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Must have full access to the

Must adhere to federal burning ordinances.

Must remove brush chippings, oversize
DETAILING THE MANNER IN
must comply with all local,
construction related waste
roadway (or floodplain)

Must use permits at all times. In

Must work concurrently with the
at revegetation and cleanup

Must prevent runoff and soil erosion to

Must prevent pollutants into water courses.

Must protect his work. Storm

Must comply in close proximity to the
requirements regarding
to other items of work.

CE OF

21) THRUST BLOCKS

Concrete thrust or "kicker" blocks shall be installed in all pressurized lines at intersections and changes of direction to resist forces acting upon the pipeline. Thrust blocks are considered incidental to pipeline installation.

22) ANCHORS / RESTRAINT

Concrete anchors shall be provided when the pipe slope exceeds 20 percent. Anchors are considered incidental to the pipeline installation. The plans also identify special areas where restrained mechanical joint pipe is required.

23) SEPARATION OF WATER AND SEWER

Horizontal - Water lines shall be laid at least 10 feet horizontally from any existing sanitary sewer. This distance shall be measured edge to edge. If field conditions do not allow this separation, the water line shall be located such that the crown of the sewer pipe is 18 inches below the invert of the water line. If field conditions do not allow this condition to be met - then the existing sewer pipe shall be removed and replaced with mechanical joint ductile iron pipe and encased in concrete.

Crossing - Water lines shall cross over existing sewers with a minimum of 18 inches of separation between the crown of the sewer and the invert of the water main. If field conditions are such that this separation can not be maintained, the existing sewer shall be removed and reconstructed of mechanical joint ductile iron pipe. The ductile iron pipe must be centered on the crossing so that the joints are at least 5 feet on either side of the crossing.

No separate payment shall be made for work to insure compliance with this separation criterion. Maintenance of adequate separation shall be considered an integral part of the unit price bid for water pipe.

24) METER SETS

Plans illustrate the approximate location of meter sets for purpose of estimating cost also indicate meter sets for ALL residents. ONLY residents who have signed a service agreement with the owner are to receive meter sets. CONTRACTOR shall obtain a final list of sign-ups immediately prior to construction of the contractor and the owner shall meet with each resident on the sign-up list to determine a mutually agreeable location for all meter sets. If CONTRACTOR fails to implement this requirement, CONTRACTOR shall bear all costs associated with relocating meter sets to the satisfaction of the residents and the owner.

25) TESTING

Completed water lines shall be subjected to the acceptance tests described in the specifications. Water lines shall be pressure tested in accordance with AWWA C-600 and disinfected in accordance with AWWA C-651.

26) NOTICE

The CONTRACTOR shall not move equipment or material to the work site, nor begin any construction prior to that specified in the "Notice to Proceed." The CONTRACTOR must notify the OWNER and ENGINEER prior to occupying the site in accordance with the requirements of the Technical Specifications.

27) TRAFFIC CONTROL

The CONTRACTOR'S work will disturb numerous private driveways and substantial portions of public thoroughfares. The terrain does not lend itself to detours. Consequently, the CONTRACTOR must observe the following traffic control requirements:

- a. Access to a residence drive may not be interrupted for more than three (3) hours at any one time.
- b. Access to all driveways and public thoroughfares must be restored at the end of each work day.
- c. Work within the limits of a public thoroughfare may only be conducted between the hours of 8:30 AM and 12:30 PM, between 12:30 PM and 3:30 PM, and between 6:00 PM and 9:30 PM. The CONTRACTOR must post signs adjacent the work stating the roadway will be closed during the posted hours at least one day in advance of proposed road closure.
- d. The CONTRACTOR must make special provision for access for emergency vehicles: police, fire, and ambulance.
- e. The CONTRACTOR shall provide all necessary safety devices in the forms of signs, flashers, barricades, etc. The CONTRACTOR shall be solely responsible for claims arising from the public with respect to his traffic control.

28) SEEDING

All disturbed areas shall be seeded in accordance with the Technical Specifications.

29) PROTECTION OF TREES

Care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees which receive damage to branches shall be pruned and treated with a tree dressing to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

Beaver-Elkhorn Water District
HALL BRANCH WATER LINE EXTENSION

Floyd County, Kentucky

Let

GENERAL NOTES

16) REPLACEMENT OF EXISTING FACILITIES

The CONTRACTOR shall replace existing entrance pipes, retaining walls, catch basins, ditches, etc. that are damaged by construction unless said facilities are specifically shown to be removed. In particular, all entrance pipes and drainage ditches shall be restored to a condition equal or better than that which existed prior to construction. Unless said facility replacement is identified as a pay item in the Design Drawings or Technical Specifications, this work shall be considered incidental to the cost of laying pipe and shall not be measured for payment.

17) DAMAGE TO GUARDRAIL, SIGNS, FENCES, ETC.

All guardrail, signs, fences, etc. damaged as a result of the construction shall be restored in like kind and character to the satisfaction of the OWNER. Unless said replacement is identified as a pay item in the Design Drawings or Technical Specifications, this work shall be considered incidental to the cost of laying pipe and shall not be measured for payment.

18) STORED MATERIALS

Request for payment for stored materials MUST be prepared in compliance with Paragraph 14.2 of the General Conditions.

19) STREAM CROSSING

Ductile iron pipe shall be employed for all stream crossings. The last 18" of backfill in all streambeds shall consist of Kentucky Department of Highways Channel Lining Class III.

20) NOTICE

The CONTRACTOR shall not move equipment or material to the work site, nor begin any construction prior to the date specified in the "Notice to Proceed." The CONTRACTOR must notify the OWNER and ENGINEER seven (7) calendar days in advance of his occupying the site.

21) THRUST BLOCKS

Concrete thrust or "kicker" blocks shall be installed in all pressurized lines at intersections and changes of direction to resist forces acting upon the pipeline. Thrust blocks are considered incidental to pipeline installation.

22) ANCHORS / RESTRAINT

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9) TOTAL SITE RESPONSIBILITY

In occupying the site and commencing work in accordance with the Notice to Proceed, the CONTRACTOR assumes total and complete responsibility for the work until final payment and release of claims. Any portion of the Work damaged in this time period shall be corrected, repaired, or replaced by the CONTRACTOR at NO additional cost to the OWNER.

10) ACCESS TO WORK

The ENGINEER, his representatives, and representatives of the OWNER shall have full access to the work at all times.

11) BLASTING

NO BLASTING SHALL BE PERMITTED ON THIS PROJECT!

12) BURNING

Burning on this project shall conform to the applicable local, state and federal burning ordinances.

13) WASTE AREAS

The CONTRACTOR will necessarily generate waste materials in the form of brush chippings, oversize boulders, muck, etc. THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN DETAILING THE MANNER IN WHICH WASTE MATERIALS WILL BE HANDLED. The CONTRACTOR shall strictly comply with all local, state, and federal laws and regulations pertaining to the disposition of construction related waste products. In no event shall waste materials be placed in a regulatory floodway (or floodplain) without a DOW permit to Construct Along or Across a Stream.

14) ADHERENCE TO PERMITS

Permits acquired by the OWNER are:

- Division of Water Drinking Water Construction Permit
- Department of Highways Encroachment Permit

The CONTRACTOR shall conduct his activities in strict accordance with these permits at all times. In particular. Key requirements include:

Revegetation and cleanup of areas adjacent to streams shall occur concurrently with the progress of the work. Concurrently is herein defined to mean that revegetation and cleanup shall be completed within seven calendar days of pipe placement.

Best management practices shall be employed to minimize sediment runoff and soil erosion to a water course.

Extreme care shall be taken to prevent spills of fuels and lubricants into water courses.

The CONTRACTOR shall obtain a storm water general permit prior to initiating his work. Storm water permits are handled by:

- Section Supervisor
- Inventory & Data Management Section
- KPDES Branch
- Kentucky Division of Water
- 14 Reilly Road
- Frankfort, Kentucky 40601

15) EXISTING UTILITIES & UNDERGROUND FACILITIES

The CONTRACTOR'S attention is called to the presence of existing utilities in close proximity to the project site. The CONTRACTOR is advised to carefully review the project requirements regarding utility relocations. All utility repair and relocation work shall be incidental to other items of work.

THE CONTRACTOR MUST MAKE A DILIGENT EFFORT TO MAINTAIN THE SERVICE OF EXISTING UTILITIES.

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				APPROVED BY:	K. Howard

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ate, P = Plug, B = Butterfly,
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1) IDENTIFICATION OF PARTIES

OWNER - Beaver - Elkhorn Water District

OPERATOR - Beaver - Elkhorn Water District

ENGINEER - The registered professional engineer designated by the OWNER to provide design, construction, and certification services.

CONTRACTOR - The entity responsible under contract to OWNER to furnish labor, equipment, etc. to complete the work specified herein

2) GENERAL PROJECT REQUIREMENTS

In the event of a conflict between any portion of the Contract Documents, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

3) PROJECT COMMUNICATIONS / INSPECTION

The ENGINEER shall be the OWNER'S designated site representative. All communication from the CONTRACTOR, and to the CONTRACTOR, shall be through the ENGINEER.

4) SAFETY

The CONTRACTOR shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The CONTRACTOR shall select the means, methods, sequences, and techniques of construction he deems appropriate for accomplishing the Work in a safe manner. The CONTRACTOR shall be responsible for all damage to persons and property resulting from his activities.

5) EMERGENCY SHUT-OFF

The CONTRACTOR shall locate existing water and gas valves prior to starting work so that in the event of an emergency the utility service may be quickly shut-off.

6) SURVEYS

The CONTRACTOR shall retain the services of a registered surveyor to establish the project limits. All surveys by the CONTRACTOR'S surveyor shall be subject to periodic checks by the ENGINEER. This checking shall in no way relieve the CONTRACTOR of his obligation to accurately lay-out the work.

7) EASEMENTS AND RIGHT-OF-WAY

The OWNER is responsible for the procurement of all permanent easements necessary or required for the project. The CONTRACTOR is responsible for temporary easements for his staging areas. It is the CONTRACTOR'S responsibility to observe the conditions of these agreements and confine his activities to the limits of the easements.

8) EXCAVATION

The CONTRACTOR shall perform all excavation necessary or required for completion of the project. This work shall include the removal and proper disposal of all materials of whatever nature encountered. All excavation is UNCLASSIFIED. Excavation shall be considered incidental to the cost of the work and shall not be measured for payment.

9) TOTAL SITE RESPONSIBILITY

In occupying the site and commencing work in accordance with the Notice to Proceed, the CONTRACTOR assumes total and complete responsibility for the work until final payment and release of claims. Any portion of the Work damaged in this time period shall be corrected, repaired, or replaced by the CONTRACTOR at NO additional cost to the OWNER.

10) ACCESS TO WORK

The ENGINEER, his representatives, and representatives of the OWNER shall have full access to the work at all times.

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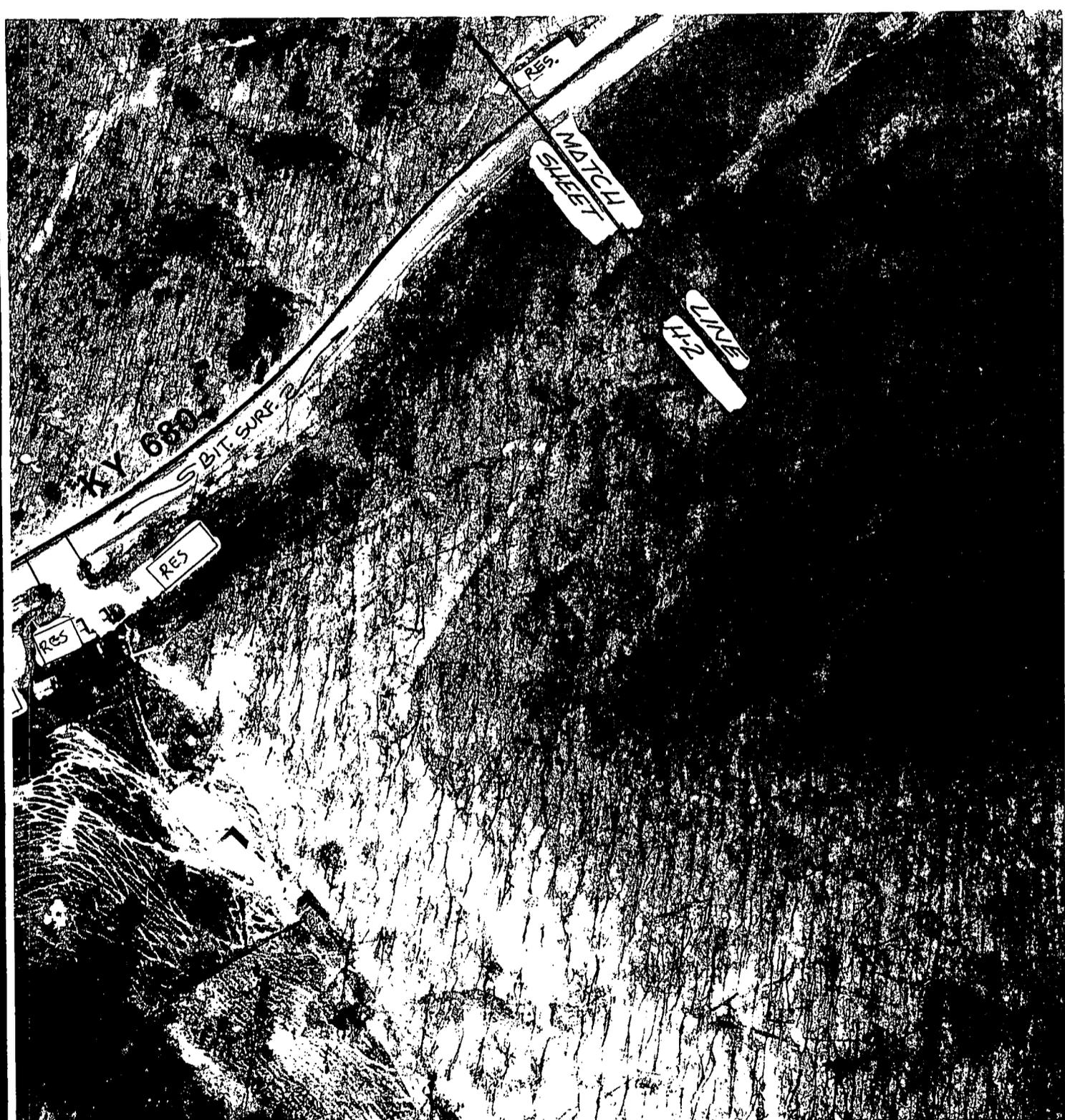
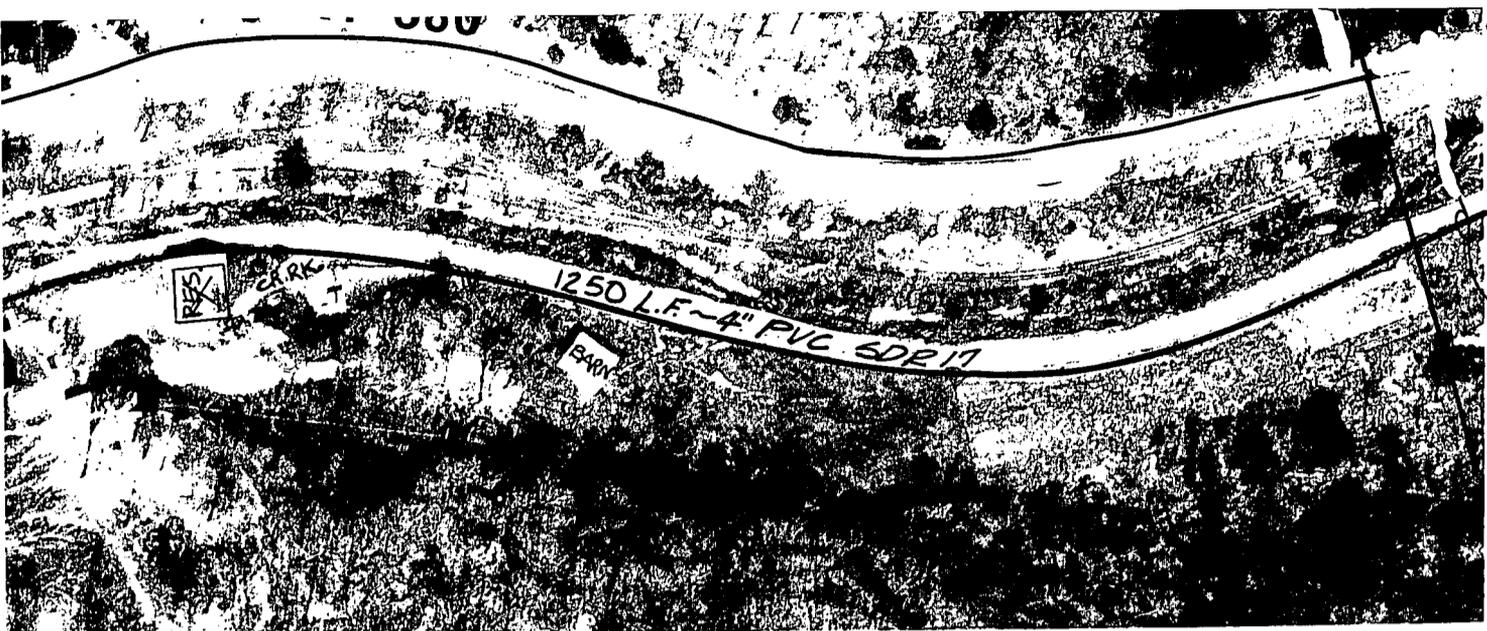
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X:\97 - 99 Civil\99-505 HALL BRANCH WATER (BEAVER)\Drawings-Allison\GENNOTES.dwg Tue Apr 13 09:51:30 1999 -A.H.

---	2" G	---	4" G	GAS LINE - SIZE INDICATED
---	W	---	8" W	WATER LINE - SIZE INDICATED
				SANITARY SEWER, MANHOLE & SERVICE LATE
				STORM SEWER & CATCH BASINS
		---	FM	FORCE MAIN
		---	S	SIPHON
	2" G		4" G	ENCASEMENT - BORE
			4" G	ENCASEMENT - OPEN CUT
				CULVERTS
---	P	---	P	OVERHEAD POWER LINE
---	T	---	T	OVERHEAD TELEPHONE LINE
---	UGx	---	UGx	UNDERGROUND POWER OR TELEPHONE
				LIGHTING POLE
				POWER POLE
				JOINT POWER & TELEPHONE POLE
				TELEPHONE & TELEGRAPH POLE
				ANCHOR, POWER OR TELEPHONE
				STUB POWER
				STUB TELEPHONE
				TRANSFORMER
				VALVE (Normal = Gate, P = Plug, B = Butt C = Curb Stop)
				CHECK VALVE
	PIV		PIV	POST INDICATOR VALVE
				FIRE HYDRANT ASSEMBLY (INC. Valve and Va
				AIR RELEASE
				FLUSH HYDRANT OR BLOW OFF (INC. Valve a
				WATER SERVICE LINE & METER SET W/ ACCE SHADED W/ PRV - OPEN W/O PRV
				WATER SERVICE LINE & TANDEM METER SET SHADED W/ PRV - OPEN W/O PRV
				TEE
				HYDRANT TEE
				GAS METER
				GAS WELL
				STOP SIGN
				STREET SIGN
				TREE LINE
				BRUSH LINE
				SILT FENCE
				DAYLIGHT LINES (CUT / FILL LIMITS)
				GUARD RAIL
---	X	---	X	FENCE LINE
				NEW CONCRETE PAVEMENT
				NEW LIGHT DUTY PAVEMENT
				NEW HEAVY DUTY PAVEMENT
				SEED AND PROTECT/RECLAIM
				WETLANDS - DISTURBED
				WETLANDS - UNDISTURBED
				WETLANDS - OFF PROPERTY
				POND
				CHANNEL LINING
				GABION CHECK DAM
				RESERVED FOR PROJECT SPECIFIC USE

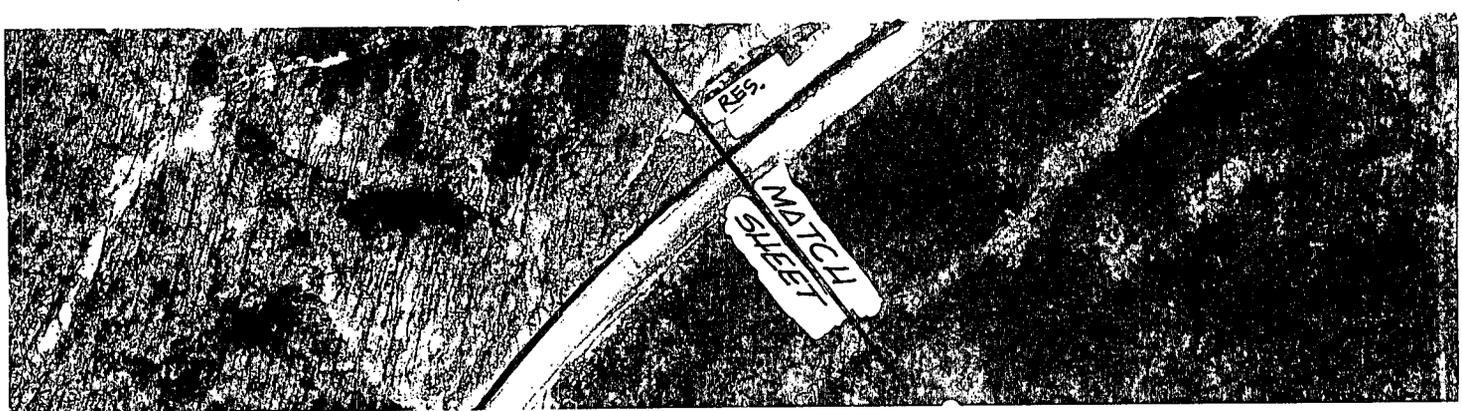
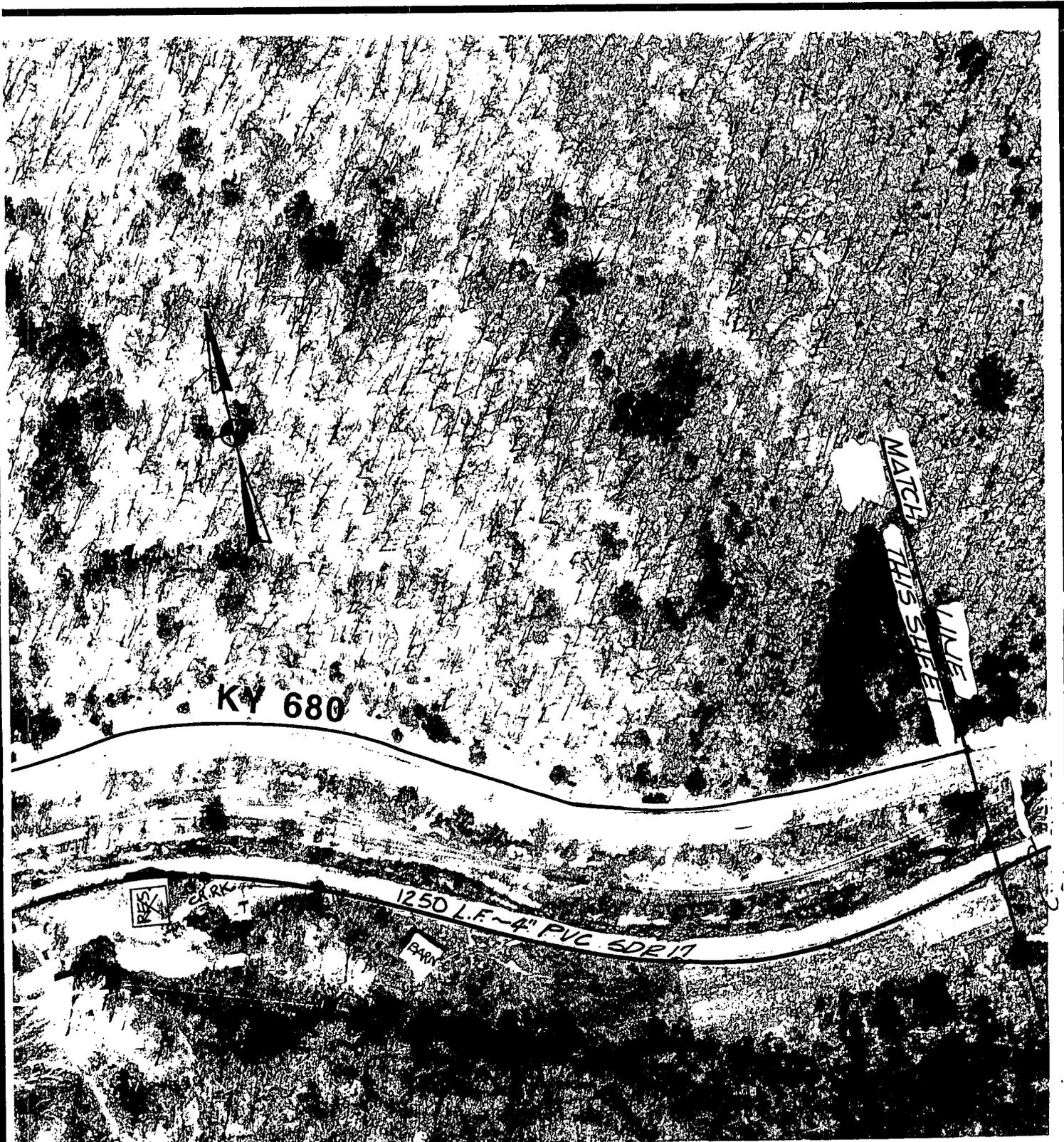
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4 INCH WATER LINE
 KY 680 (HALL FORK)

KEVIN M
 HOWARD
 13515
 2/15/99

DIVISION	
CONTRACT NO.	1
DATE	3/99
SHEET NO.	H-1



2400 LF 4" PVC SDR 17

HALL FORK

1. 4" x 4" x 3" DR. M. TEE W/ G
1. BLOW OFF
COMPLETE W/ VALVE

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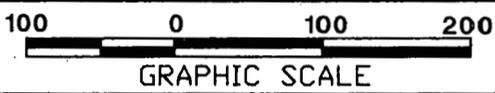
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GRAPHIC SCALE

WATER DISTRIBUTION SYSTEM FACILITIES
BEAVER ELKHORN WATER DISTRICT
FLOYD COUNTY, KENTUCKY

SCALE: 1"=100'

2400 LF 4" PVC SDR 17

HALL FORK

4" x 4" x 3" DE. M. TEE W/ G

1 BLOW OFF

COMPLETE W/ VALVE

RES. RES. CR. RR. RR. RES.



2400

KEY 680

SBIT. SURF. 2

1- REMOVE PILE AND TIE-IN
TO EXISTING 2" WATER LINE
2- 20' R/S REDUCER
3- 10' GATE VALVE AND BOX

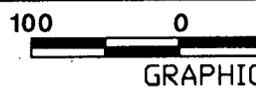


SUMMIT ENGINEERING, INC.



Pikeville, Kentucky
Lexington, Kentucky
Grundy, Virginia

NOTE:
ORIGINAL MAPPING
PRODUCED BY H.K. BELL



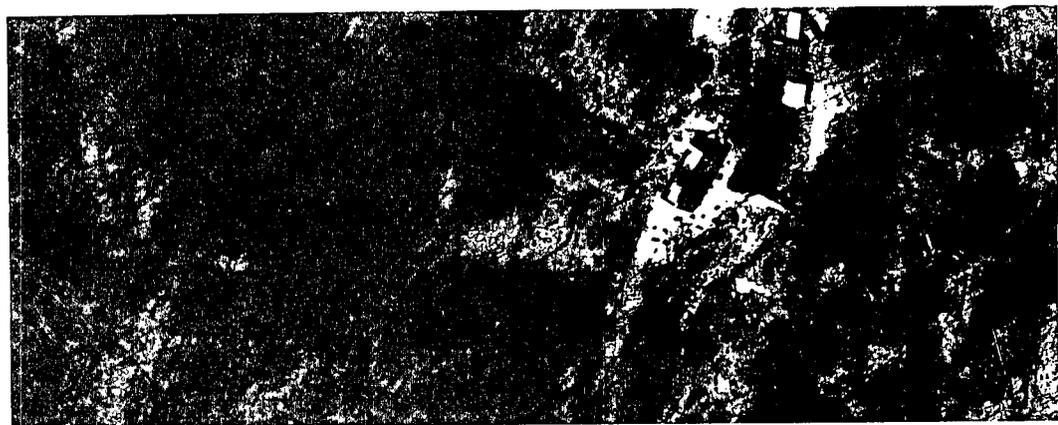
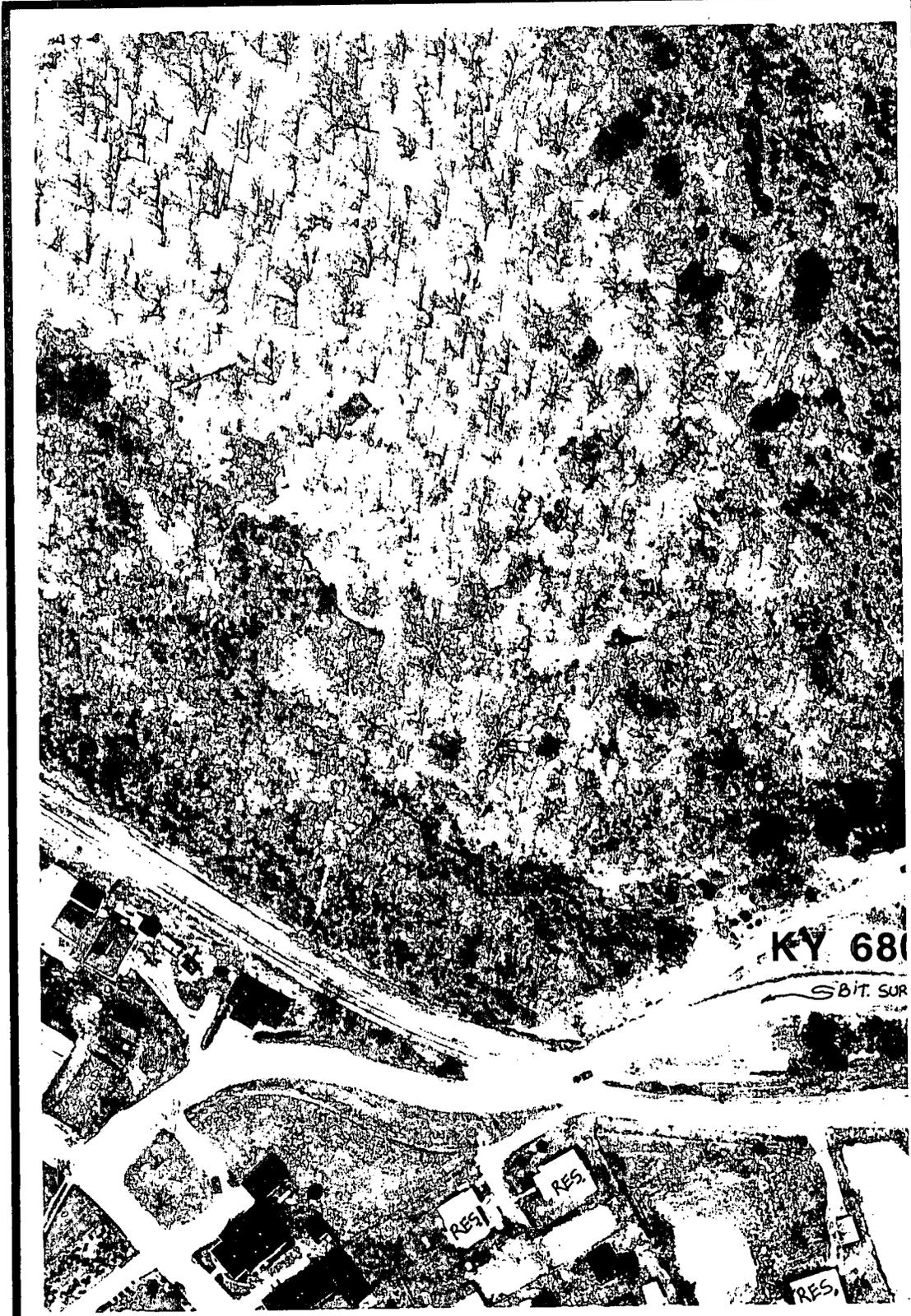
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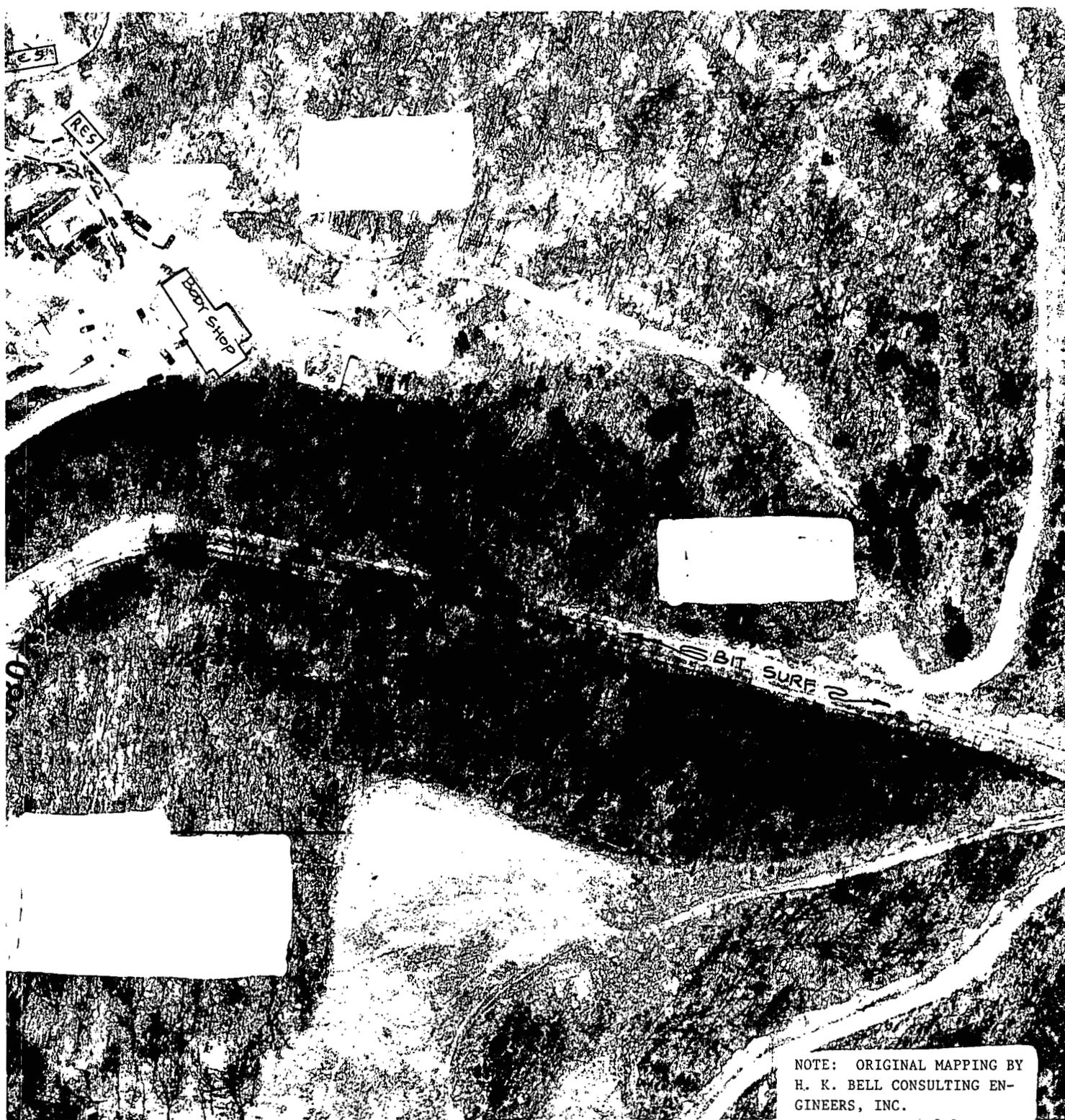
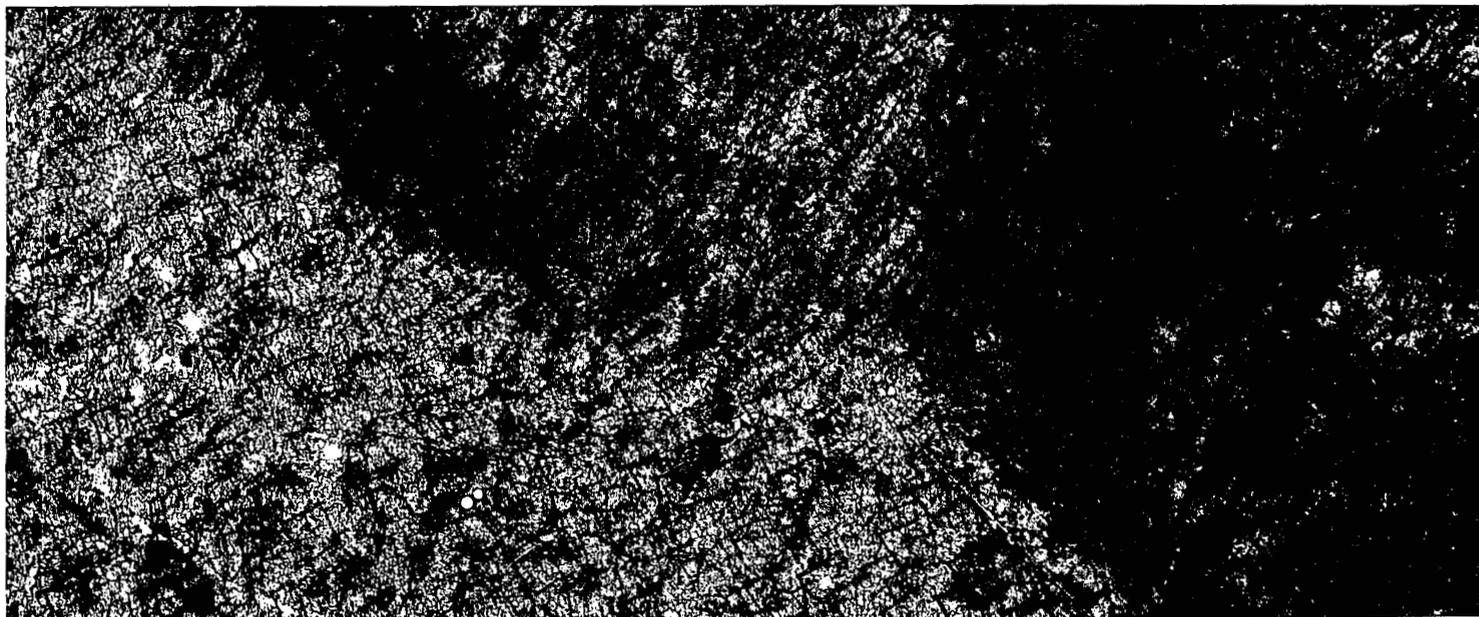
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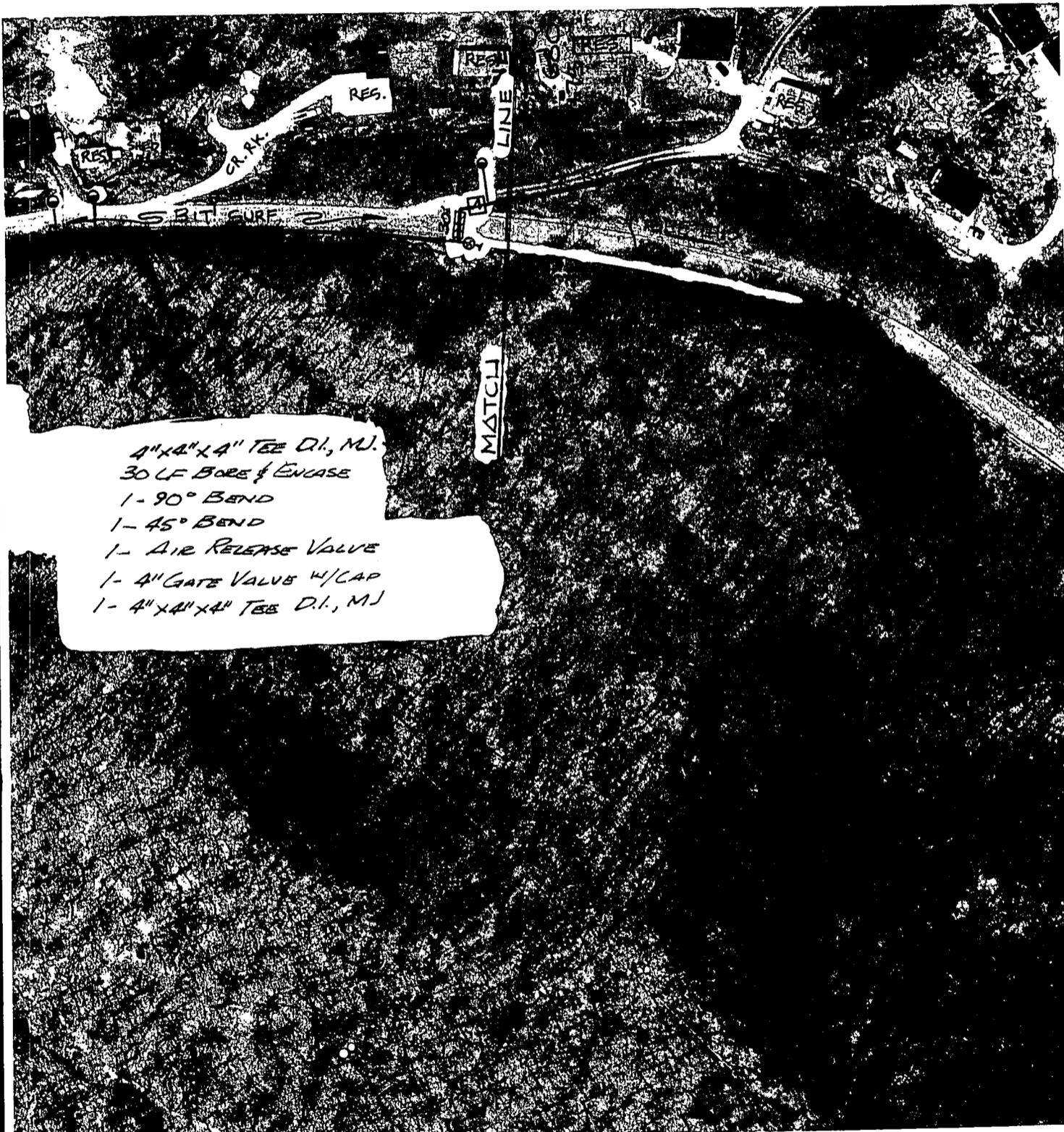
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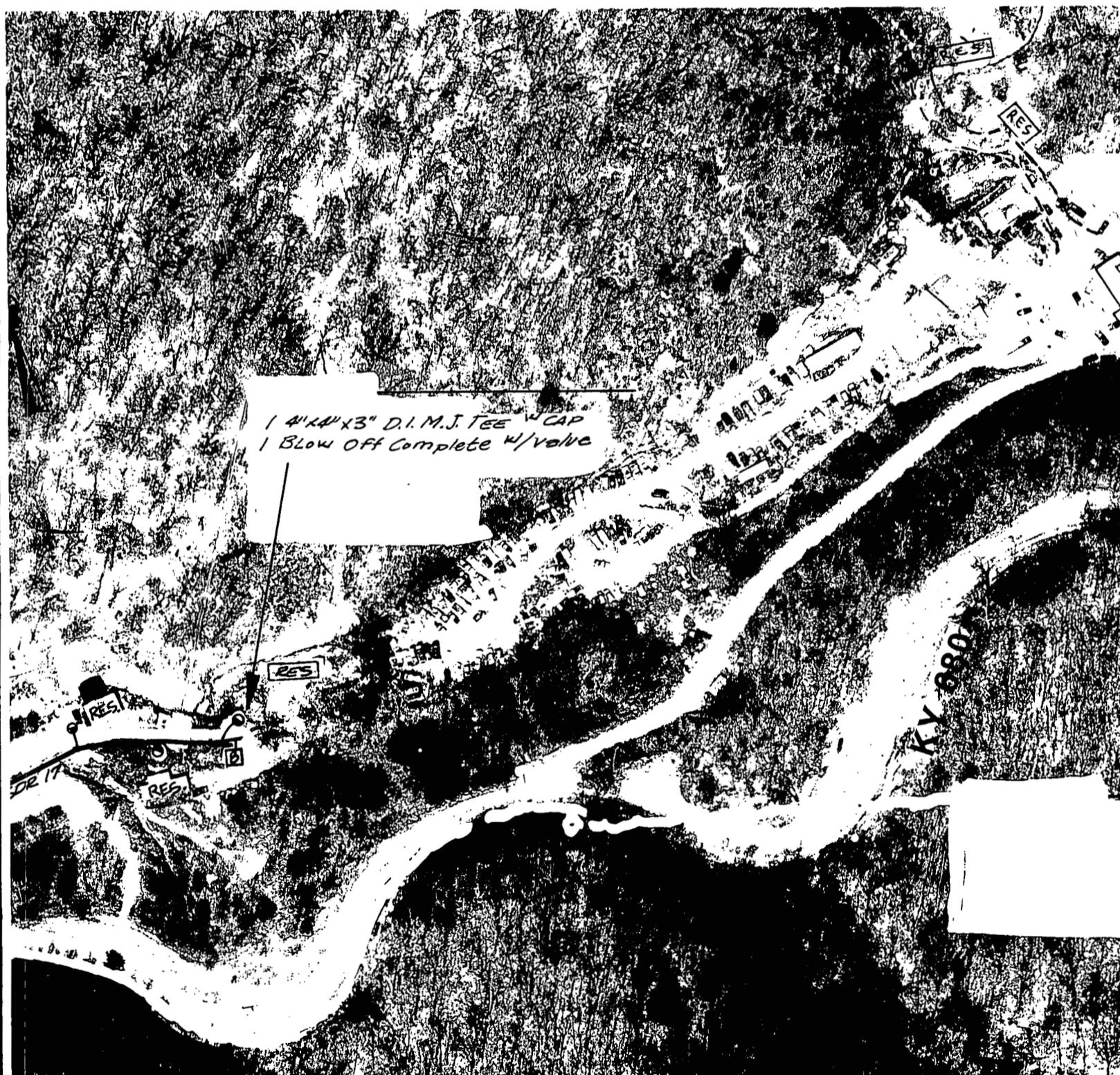
NOTE: ORIGINAL MAPPING BY
H. K. BELL CONSULTING EN-
GINEERS, INC.

S	4 INCH WATER LINE KY 680 (HALL FORK)		DIVISION
			CONTRACT NO. 1
			DATE 3/99
			SHEET NO. H-2



- 4" x 4" x 4" TEE D.I., M.I.
- 30 LF BORE & ENCASE
- 1- 90° BEND
- 1- 45° BEND
- 1- AIR RELEASE VALVE
- 1- 4" GATE VALVE W/CAP
- 1- 4" x 4" x 4" TEE D.I., M.I.



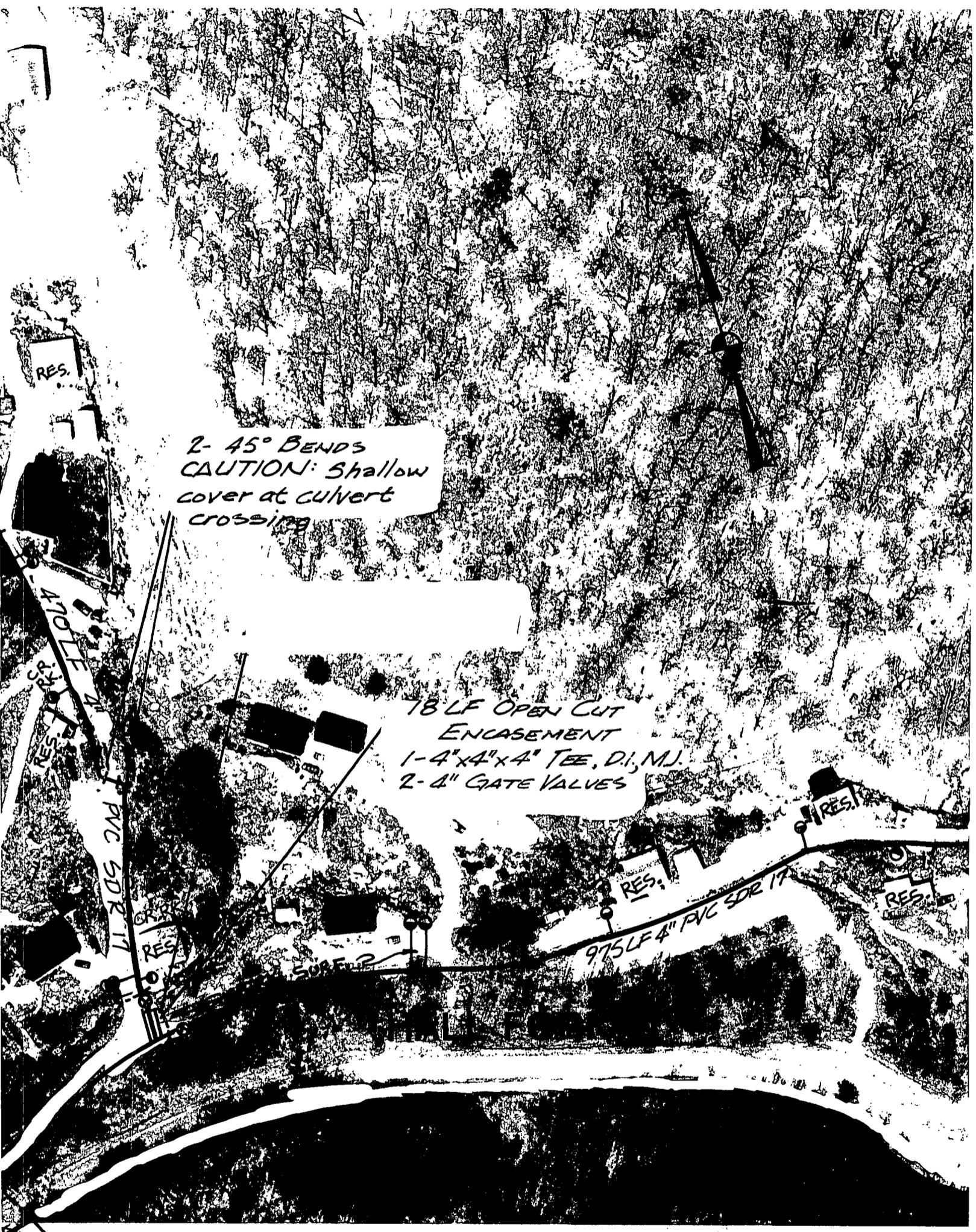


SCALE: 1" = 100'

WATER DISTRIBUTION SYSTEM FACILITIES
BEAVER ELKHORN WATER DISTRICT
FLOYD COUNTY, KENTUCKY

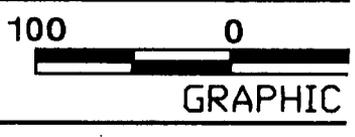
2- 45° BENDS
CAUTION: Shallow
cover at culvert
crossing

78 LF OPEN CUT
ENCASEMENT
1- 4" x 4" x 4" TEE, D.I., M.J.
2- 4" GATE VALVES



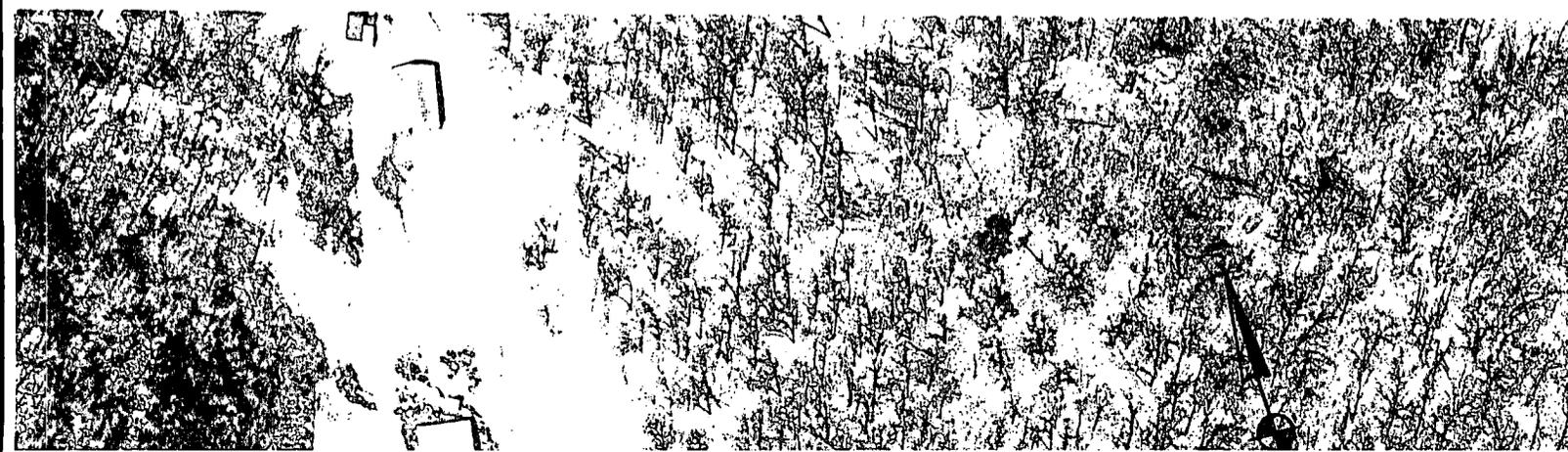
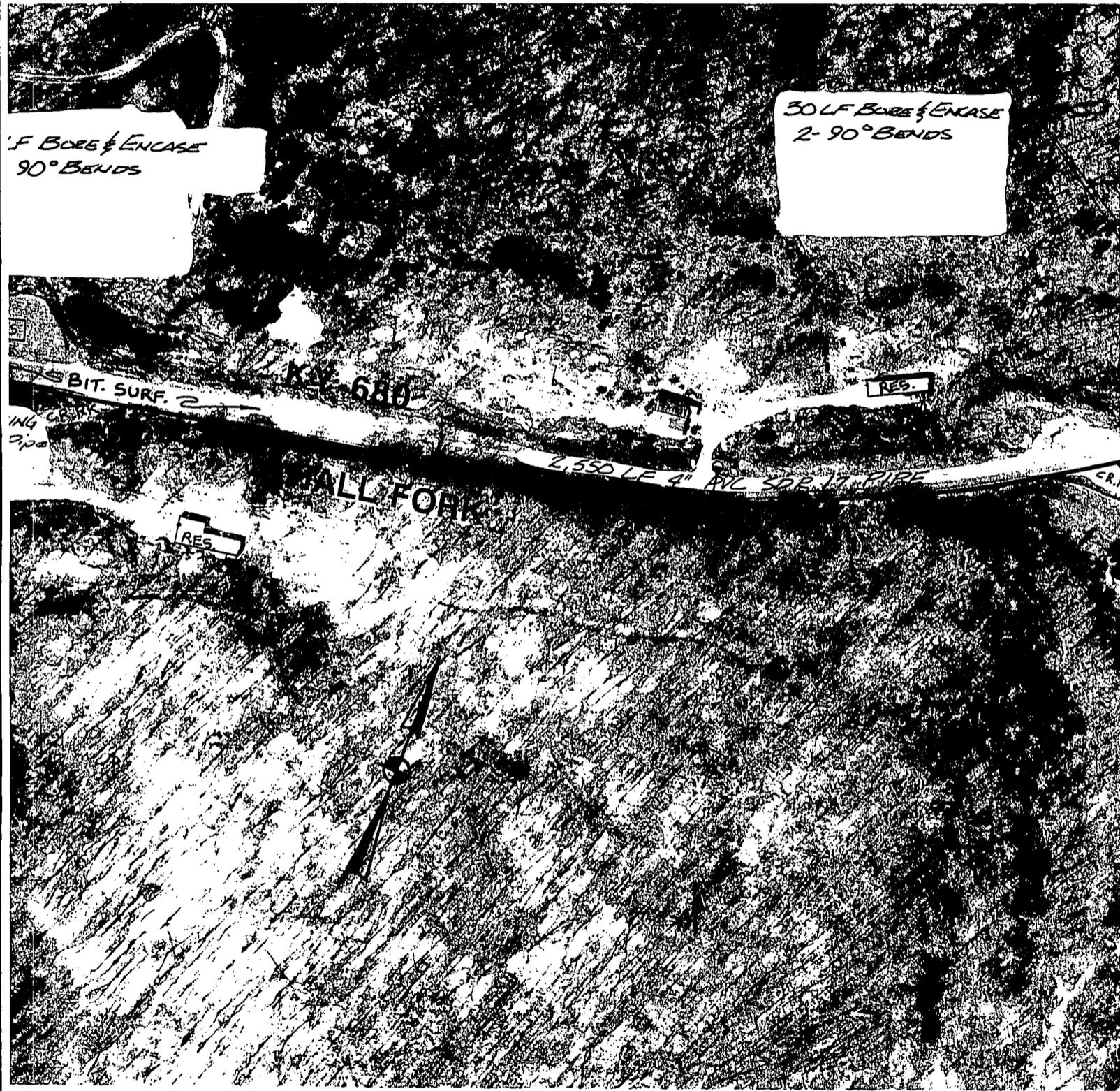
AMIT ENGINEERING, INC.

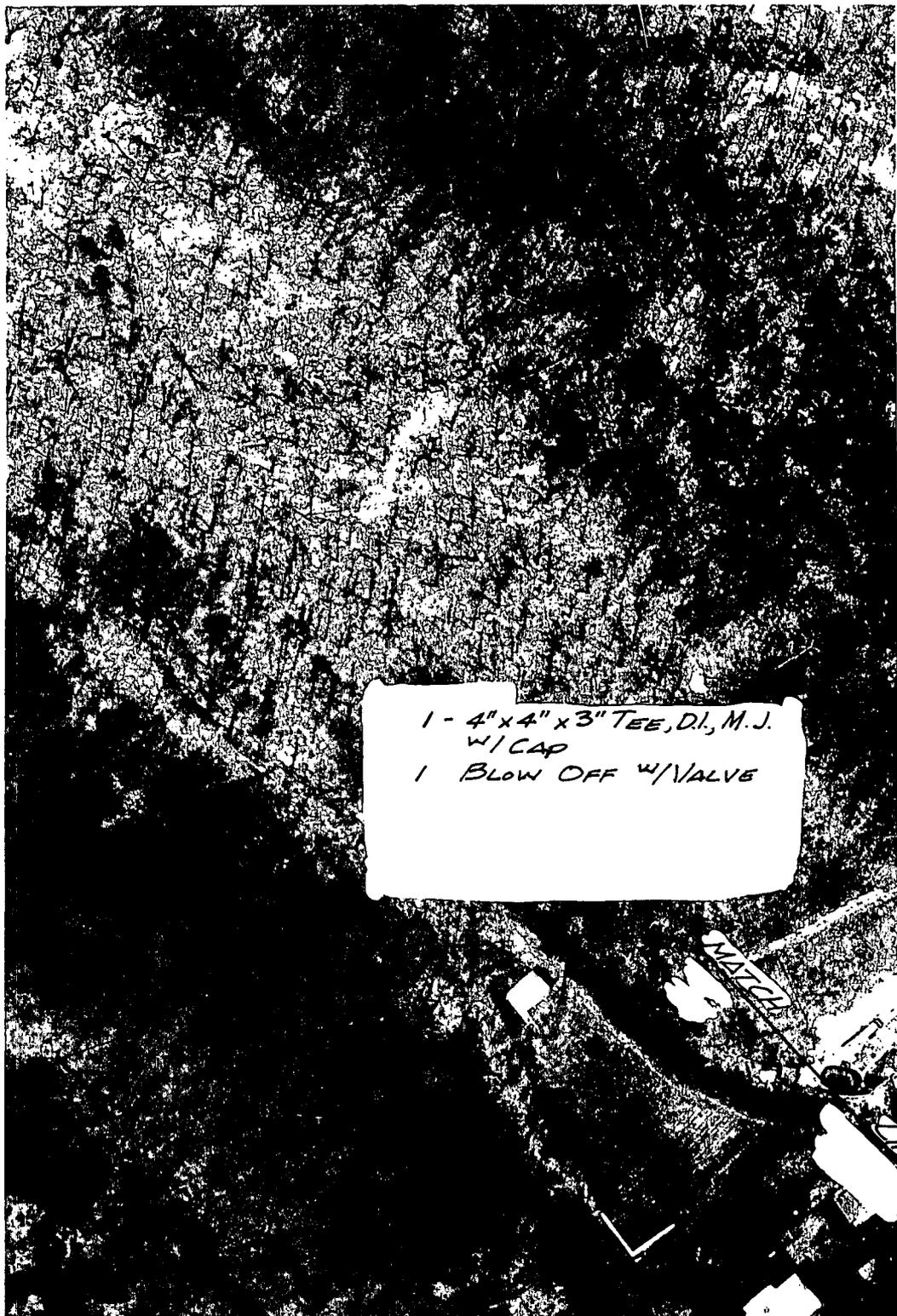
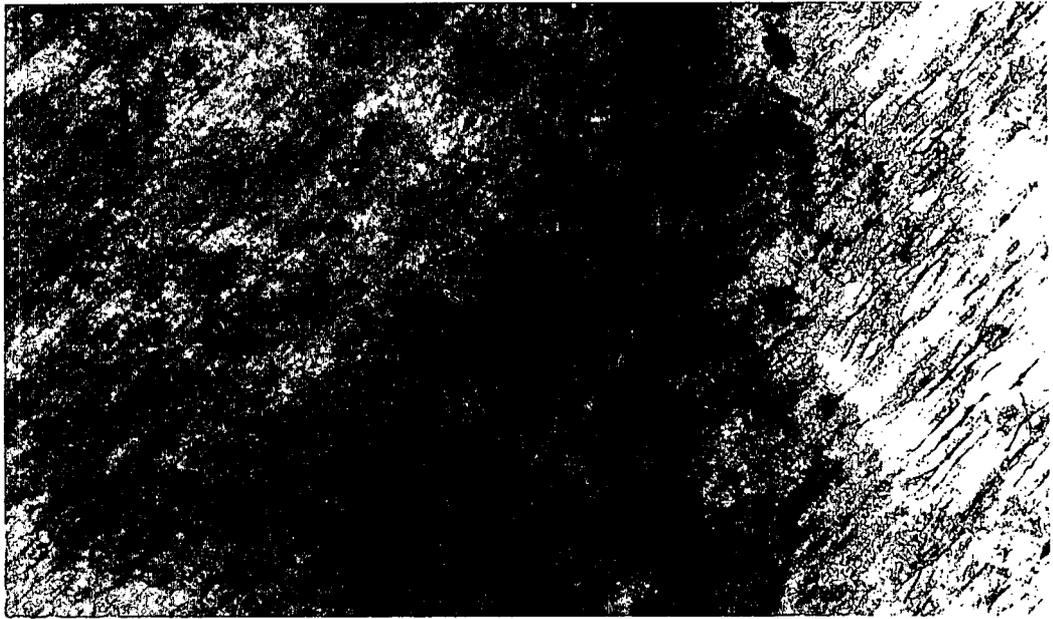
NOTE:
ORIGINAL MAPPING
PRODUCED BY H.K. BELL



Pikeville, Kentucky
Lexington, Kentucky
Grundy, Virginia

SCALE: 1" = 100'

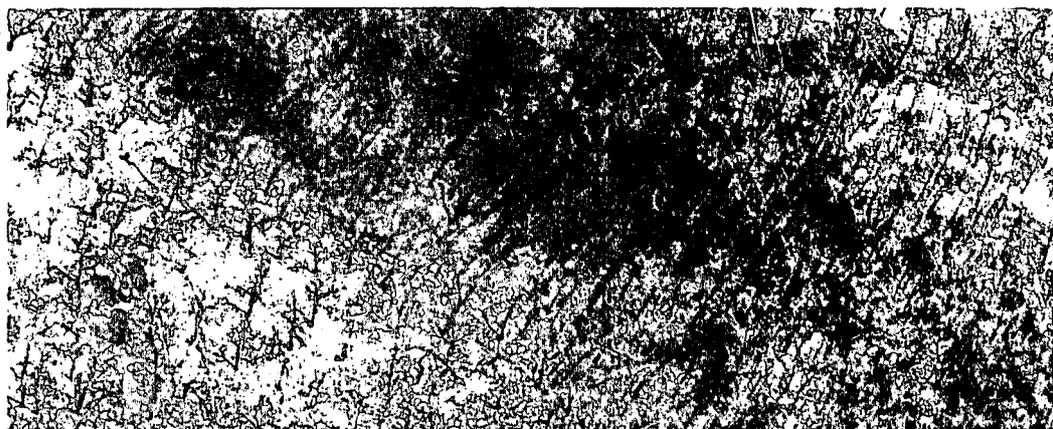
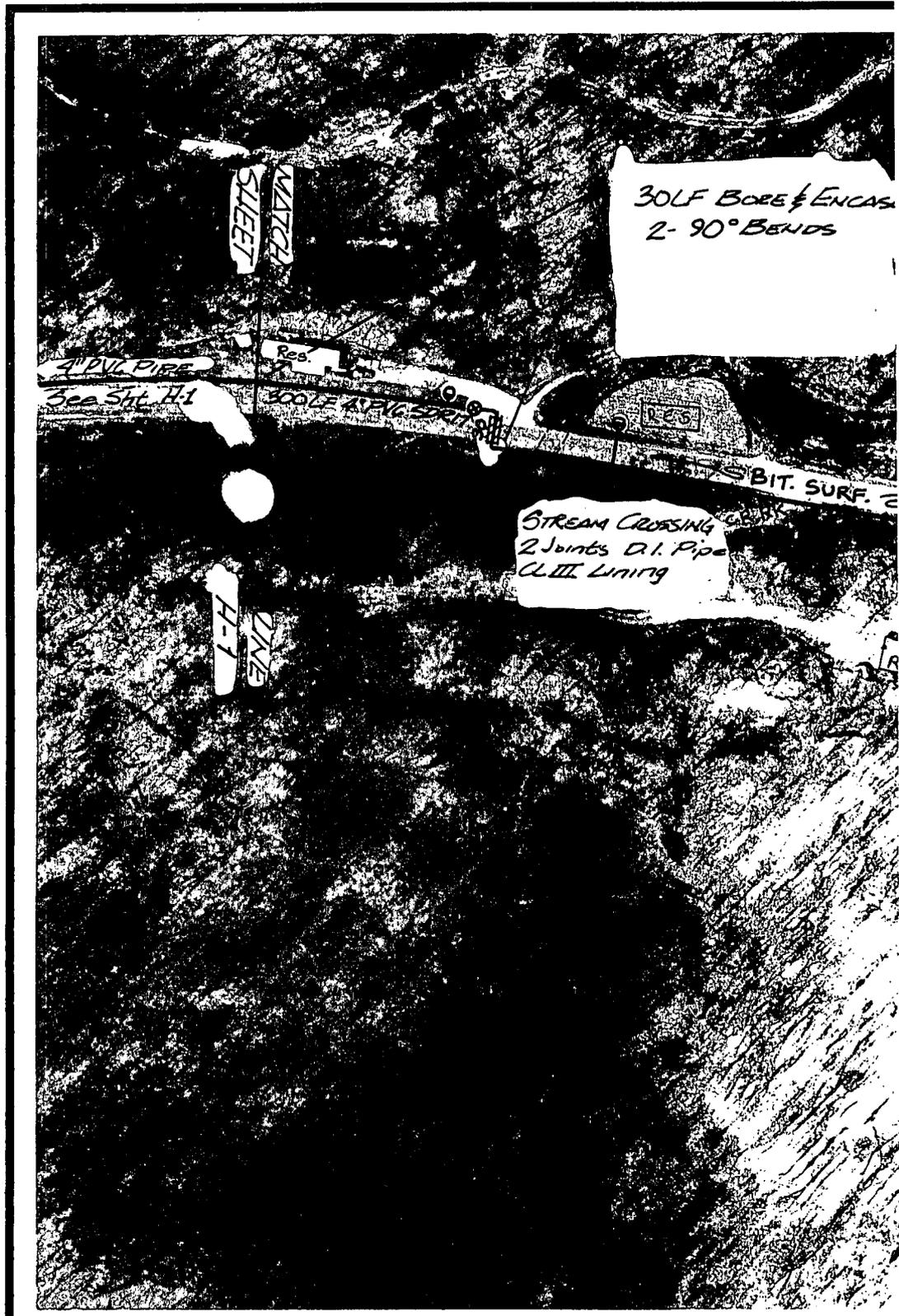




1 - 4" x 4" x 3" TEE, D.I., M.J.
W/ CAP
1 BLOW OFF W/ VALVE

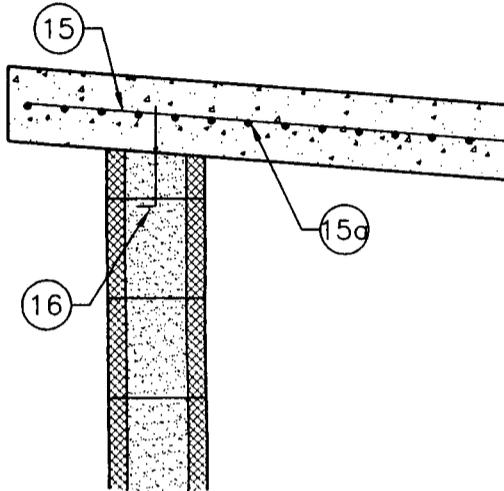
MAGNET

DESIGNER	DATE	BY	REVISION
PRODUCTION			
CHECKED			
APPROVED			



FRONT ELEVATION

Scale: 1/2"=1'



DETAIL 'A'

Scale: 1"=1'

LEGEND

	Surge Relief Valve
	Electric Check Valve
	Strainer
	Flex Pipe
	Resilient Wedge Gate Valve w/ Rising Stem
	Pressure Gauge
	Air Release Valve
	Duplex Receptacle
	Floor Drain
	Control Panel
	Pump
	Light Switch
	Fluorescent Light
	Dehumidifier

PROCESS

- 1 Pumps - Grundfos CP8-80KU, 3450 RPM, 55 GPM, @ 262' TDH. (Single Phase)
- 2 Lump Sum price for booster pumping station includes suction and discharge lines from station to 4" valve outside of station.
- 3 4"x4"x4" D.I. TEE, F.J.
- 4 Provide 1/2" tap, 1/2 Valve and 1/2" copper service tubing for air release valve
- 5 HypoChlorinator - Polyethylene day tank and liquid metronics metering pump, or equal.
- 6 All Pipe in building 3"φ and larger shall be D.I. 250# flanged joint. All pipe below slab shall be D.I., M.J. Pipe smaller than 3" shall be red brass rated at 250#.
- 7 Elevation of CL of Pumps may vary.

STRUCTURAL

- 8 CONTRACTOR to provide masonry block pump house with reinforced concrete floor and roof as shown.
- 9 7 5/8"x15 5/8"x8" Split face hollow load bearing block with natural exterior finish.
- 10 Block Reinforcement
Horizontal - Blok-Lok (or approved equal) every other course
Vertical - No. 4 bar on 8" Centers - every other bar full height of wall, fill void with Class 'A' Concrete
- 11 Block Insulation - "Water Repellent Fill Insulation" or approved equal.
- 12 Block Seal - Provide masonry waterproofing / seal coat.
- 13 Doors - 2 standard 18 gauge steel doors, 3'x7'0"x1 3/4", tamper proof hinges, dead bolt lock. Aluminum Threshold.
- 14a Thermostatically Controlled, Wall Mounted Exhaust with Back draft Damper.
- 14b Automatic Aluminum Louvered Intake Vent to open when Exhaust Fan Activates.
- 15 No. 4 at 12" O.C.
- 15a No. 4 at 6" O.C.
- 16 1"φ anchor bolt at 24" O.C., Grout Cell, anchor bolt length 18"
- 17 No. 5 @ 12" O.C.
- 18 No. 4 @ 9" O.C.

MECHANICAL and ELECTRICAL

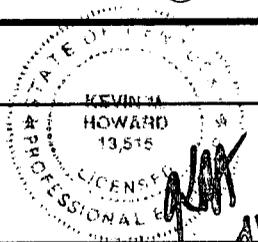
- 19 Power Supply. Service Entrance included, Not Shown for Clarity
- 20 Breaker Box / Transformer
- 21 Control Panel - Nema 3R
- 22 Two tube, 40 watt, rapid start, "OSHA" approved enclosed and gasketed fluorescent light fixture.
- 23 Duplex, Grounding type, 3 wire, polarized convenience receptacle
- 24 Wall mounted, forced air electric heater, 5000 BTU/H Dayton 2E434, Bracket 23433, or equal.

MISCELLANEOUS

- 25 Daylight 4" Drain in surface drainage way.
- 26 Polyethylene Vapor Barrier
- 27 Finished Floor Elevation minimum 6" above grade.
- 28 Pumps to be mounted on reinforced conc. pump pads minimum 6" above FFE (Also See Note 7)
- 29 Dehumidifier (See Specs). Plumb to Drain.
- 30 Pave drive to pump station (4" DGA Base, 3" Asphalt).

Contract No.2

Details for Excavating,
Bedding and Backfilling
for Pipe Utilities



SUMMIT
ENGINEERING
INC.

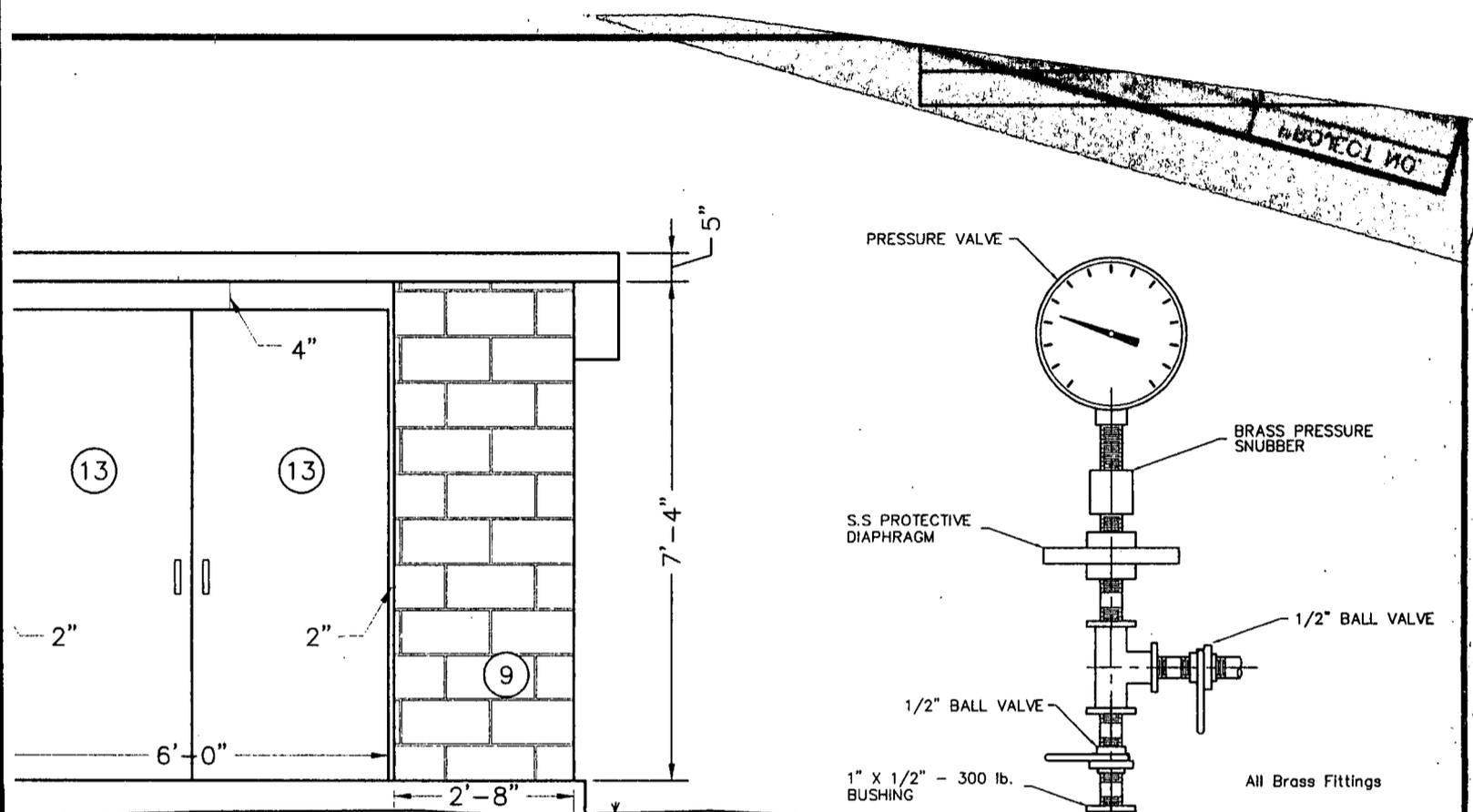
PIKEVILLE, KY
LEXINGTON, KY
GRUNDY, VA
LOGAN, WV

SCALE: N.T.S. DATE: 4/14/99

SHEET:

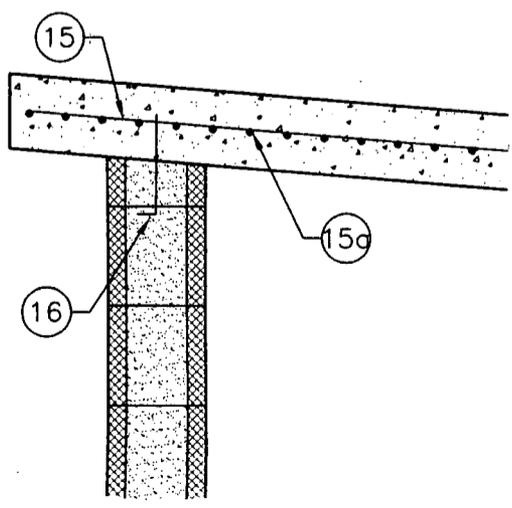
PS-1

OF:



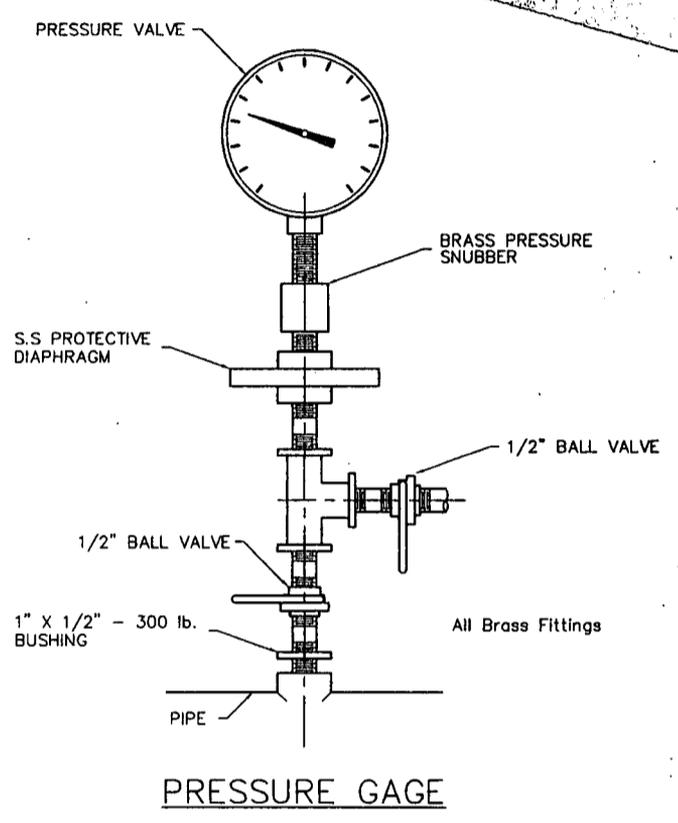
FRONT ELEVATION

Scale: 1/2"=1'



DETAIL 'A'

Scale: 1"=1'



PRESSURE GAGE

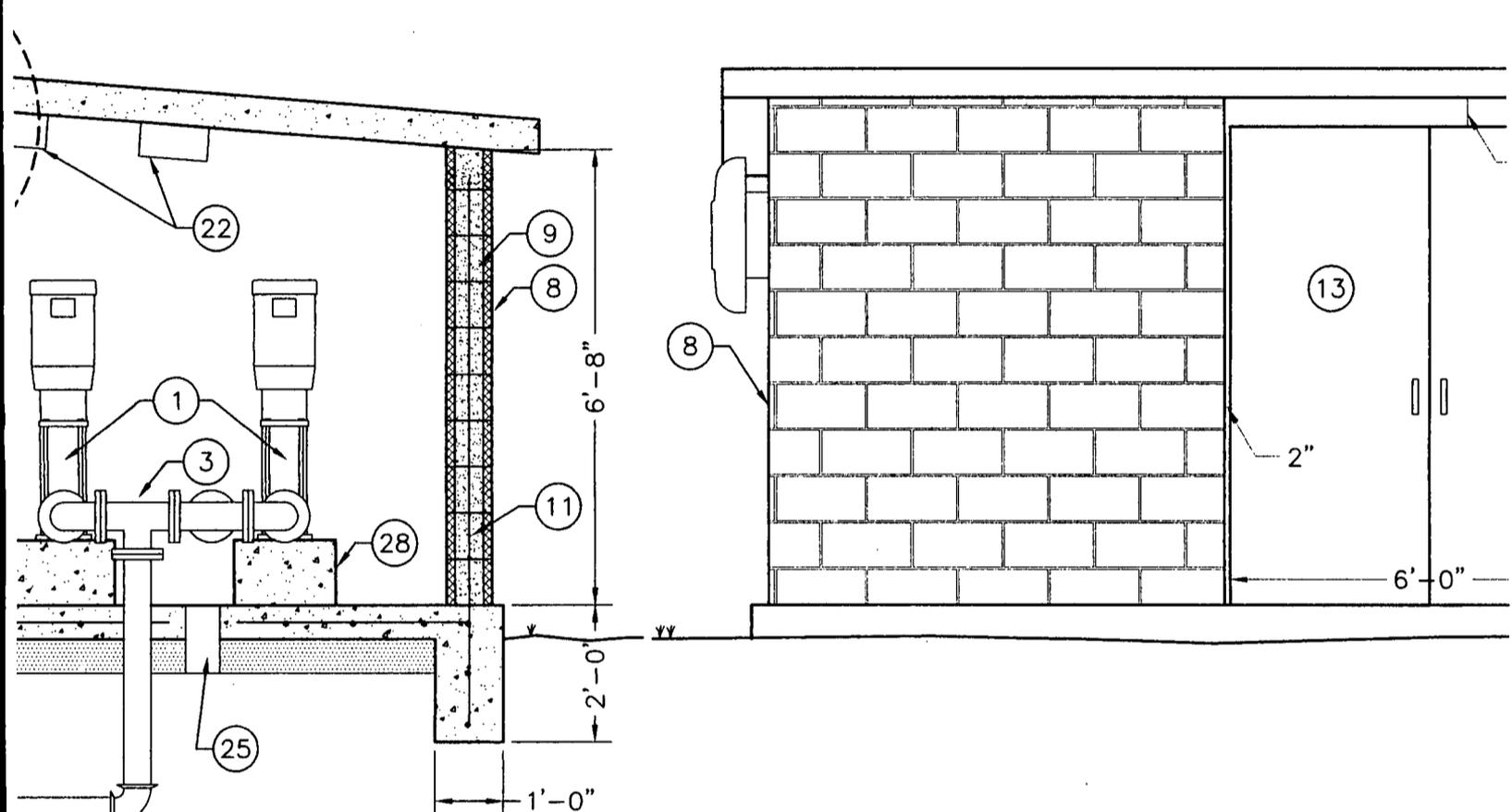
PROCESS

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- ② Lump Sum price for booster pumping station includes suction and discharge lines from station to 4" valve outside of station.
- ③ 4"x4"x4" D.I. TEE, F.J.,
- ④ Provide 1/2" tap, 1/2 Valve and 1/2" copper service tubing for air release valve
- ⑤ HypoChlorinator - Polyethylene day tank and liquid metronics metering pump, or equal.
- ⑥ All Pipe in building 3"ø and larger shall be D.I. 250# flanged joint. All pipe below slab shall be D.I., M.J. Pipe smaller then 3" shall be red brass rated at 250#.
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STRUCTURAL

- ⑧ CONTRACTOR to provide masonry block pump house with reinforced concrete floor and roof as shown.
- ⑨ 7 5/8"x15 5/8"x8" Split face hollow load bearing block with natural exterior finish.
- ⑩ Block Reinforcement
 Horizontal - Blok-Lok (or approved equal) every other course
 Vertical - No. 4 bar on 8" Centers - every other bar full height of wall, fill void with Class 'A' Concrete

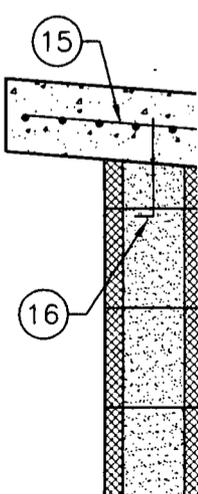
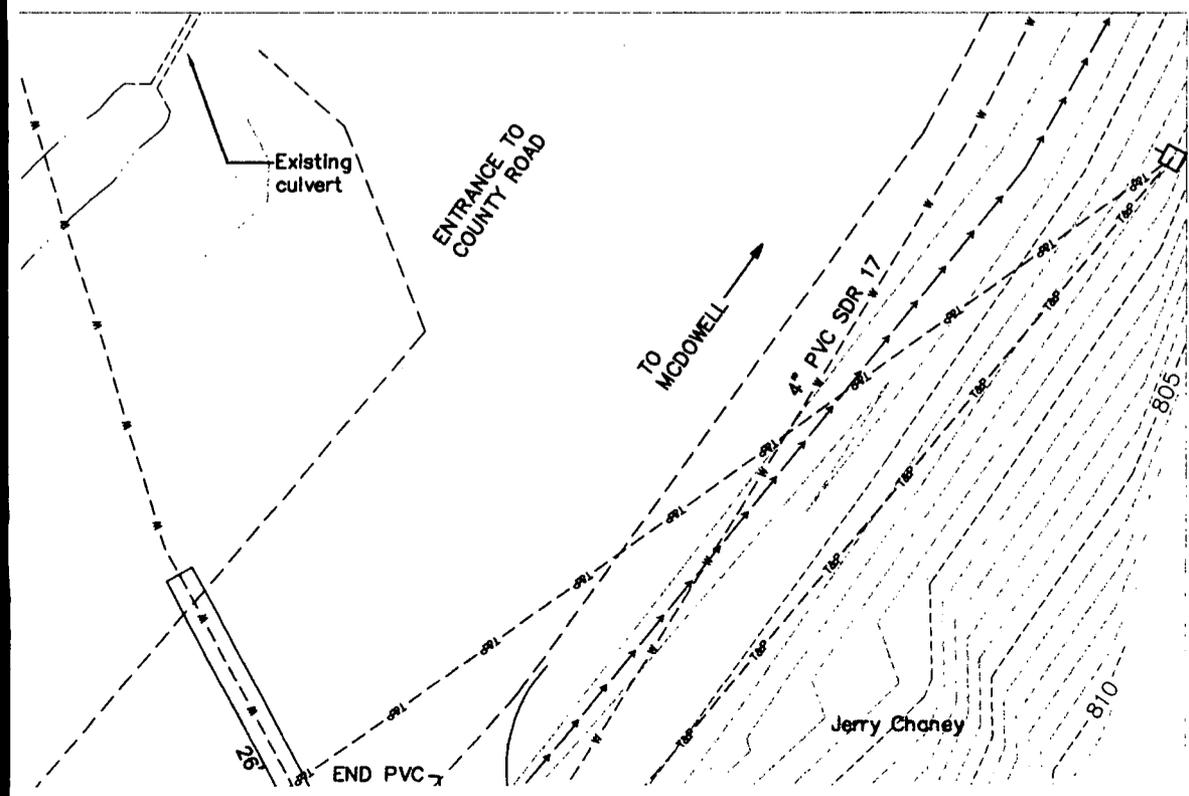
See Detail 'A'



B-B

Scale: 1/2"=1'

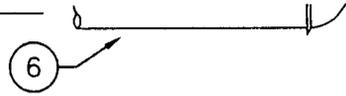
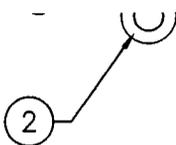
FRONT EL



DETAIL

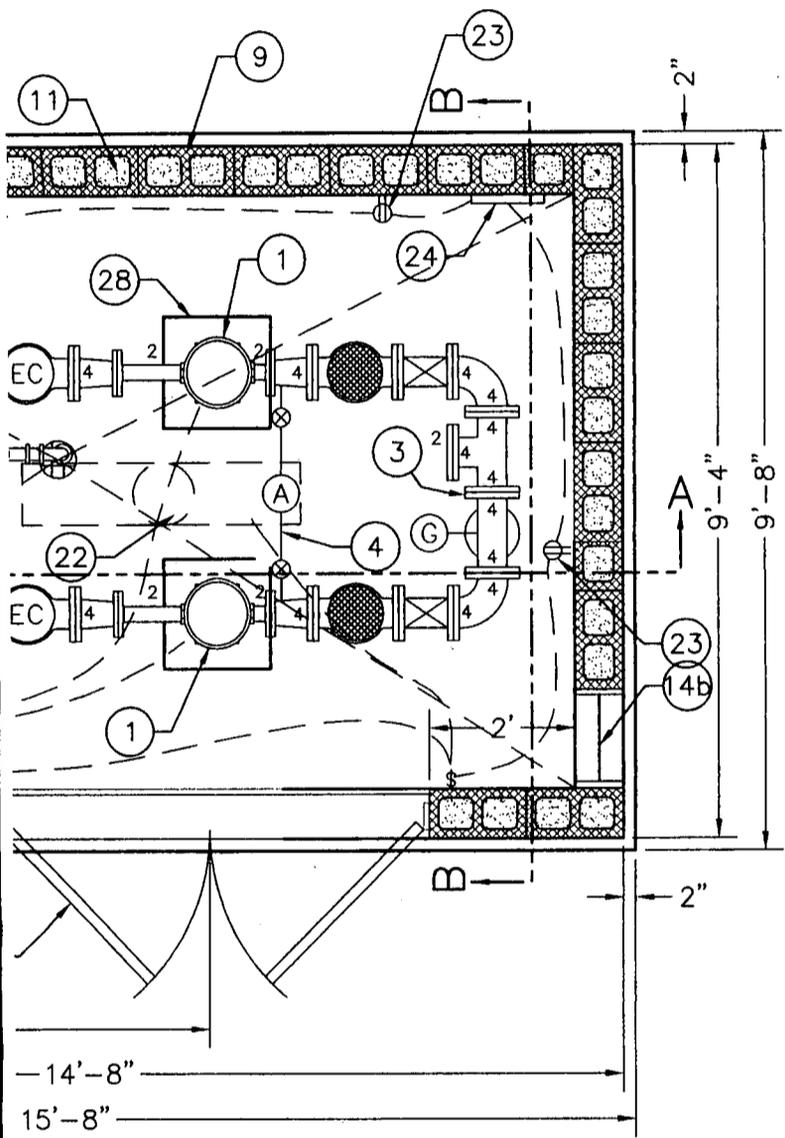
A-A

Scale: 1/2"=1'



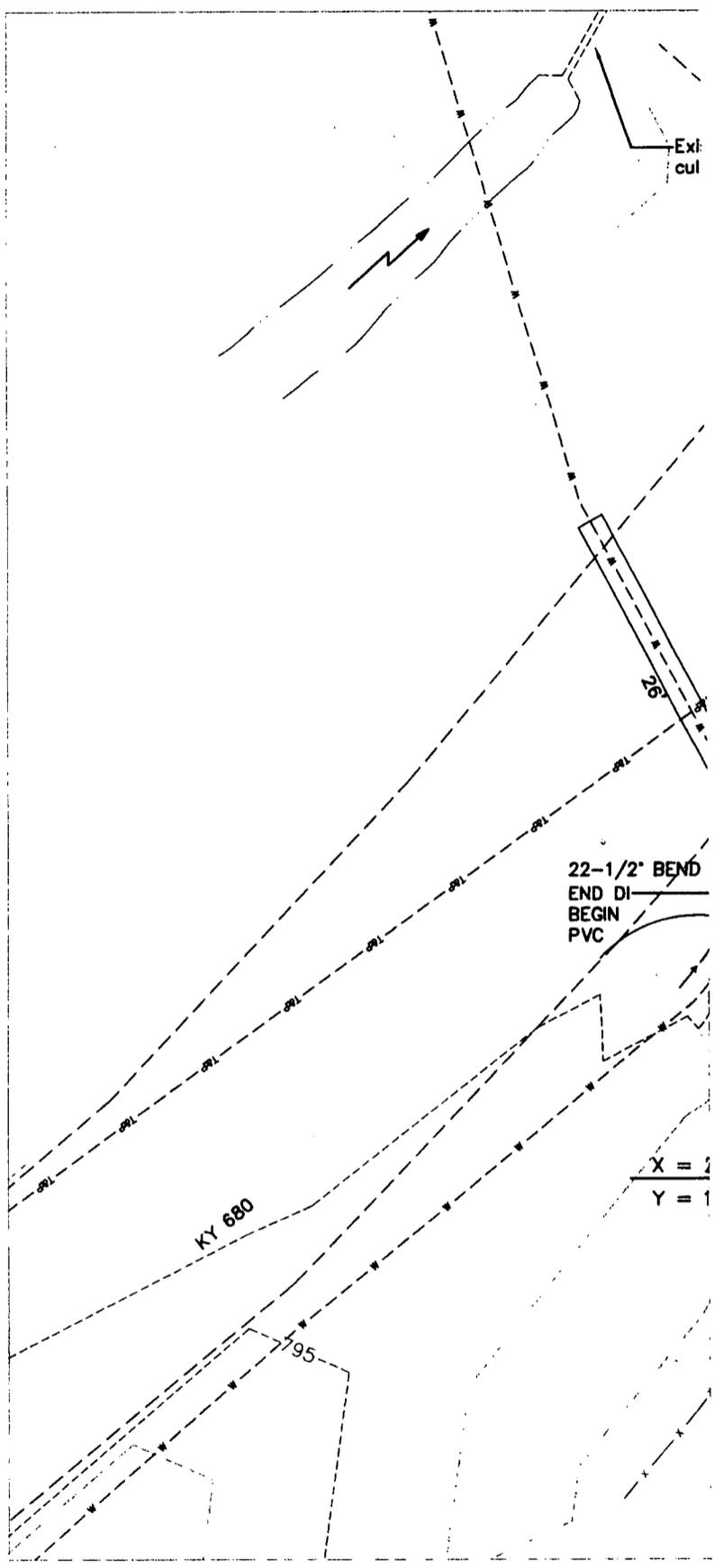
B-

Scale



AN VIEW

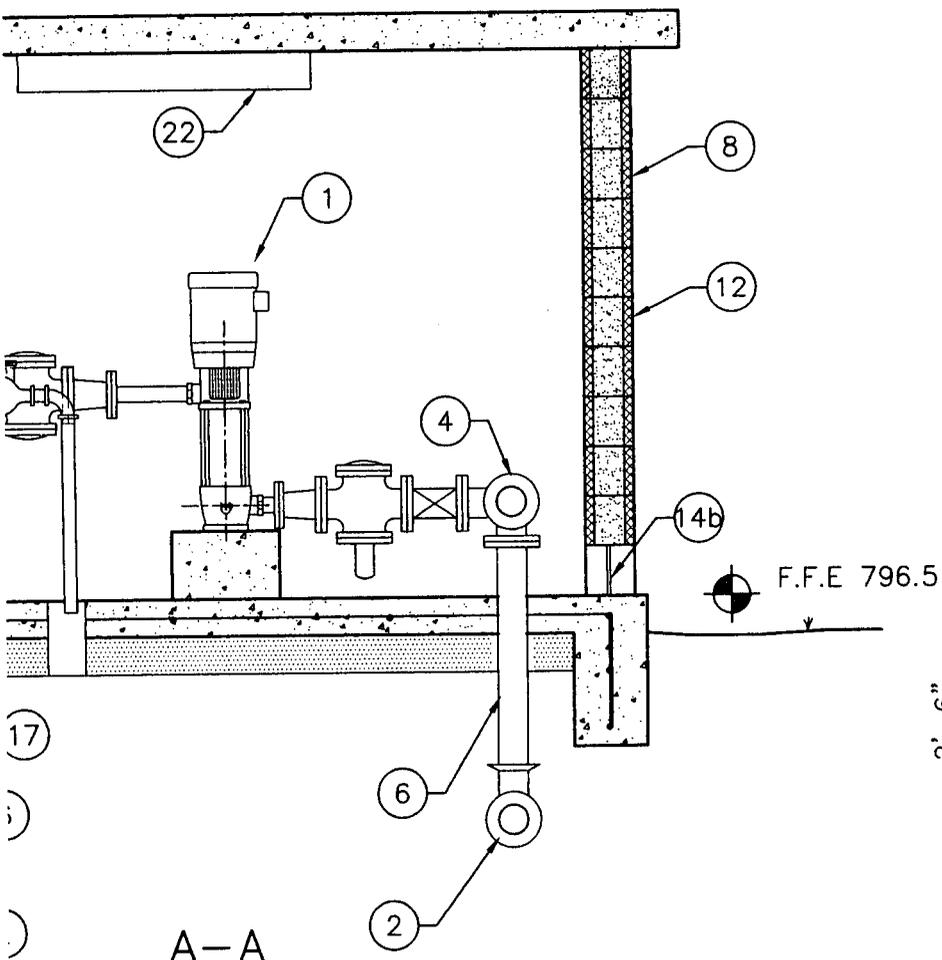
Scale: 1/2"=1'



REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DRAWN BY:	C. Schneider
					CHECKED BY:	K. Howard
					APPROVED BY:	K. Howard

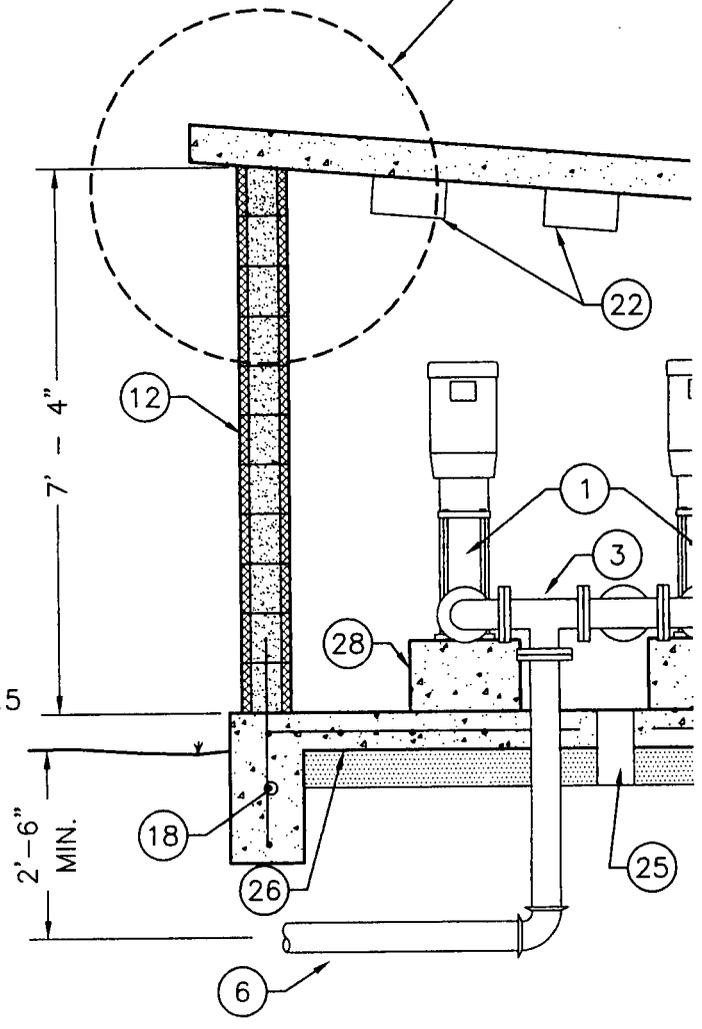
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See Detail 'A'



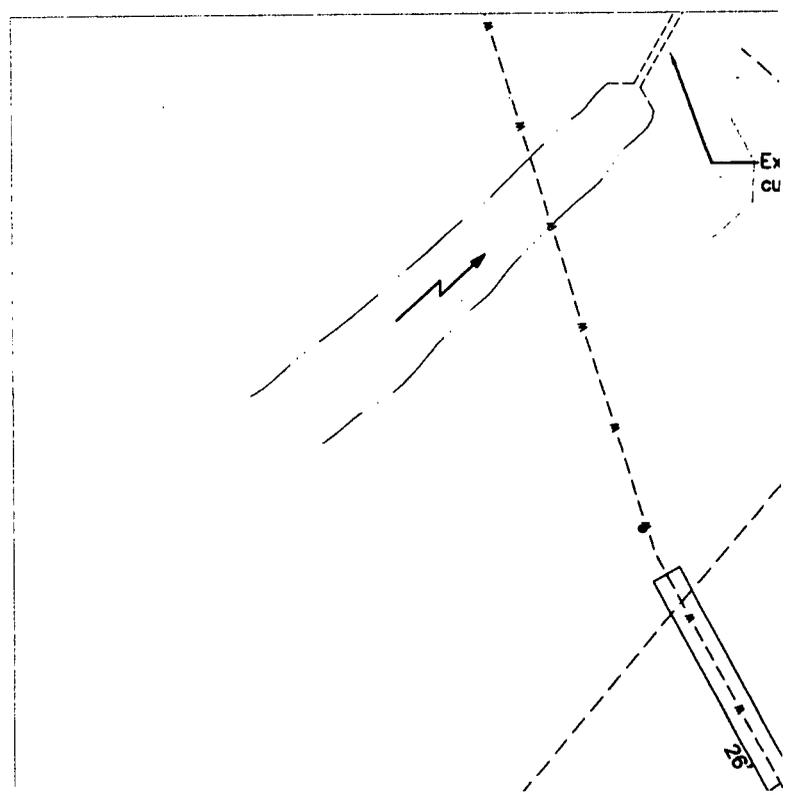
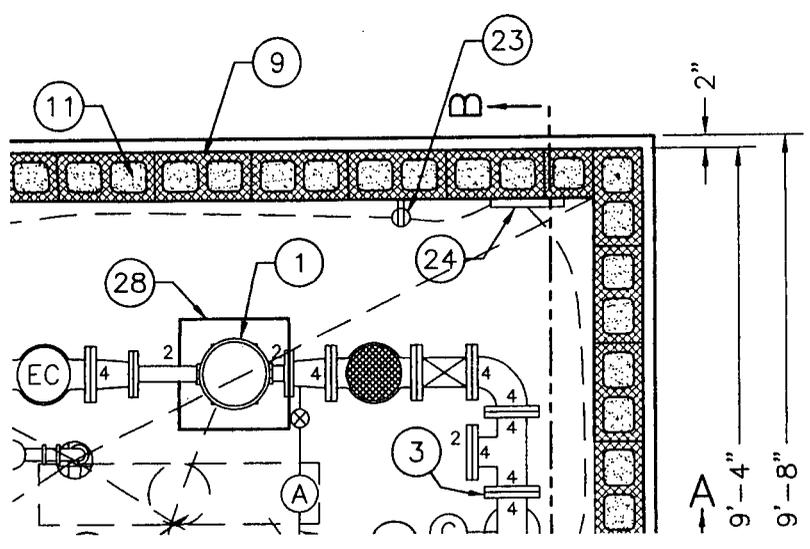
A-A

Scale: 1/2"=1'

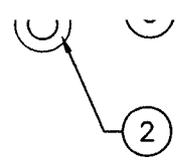


B-B

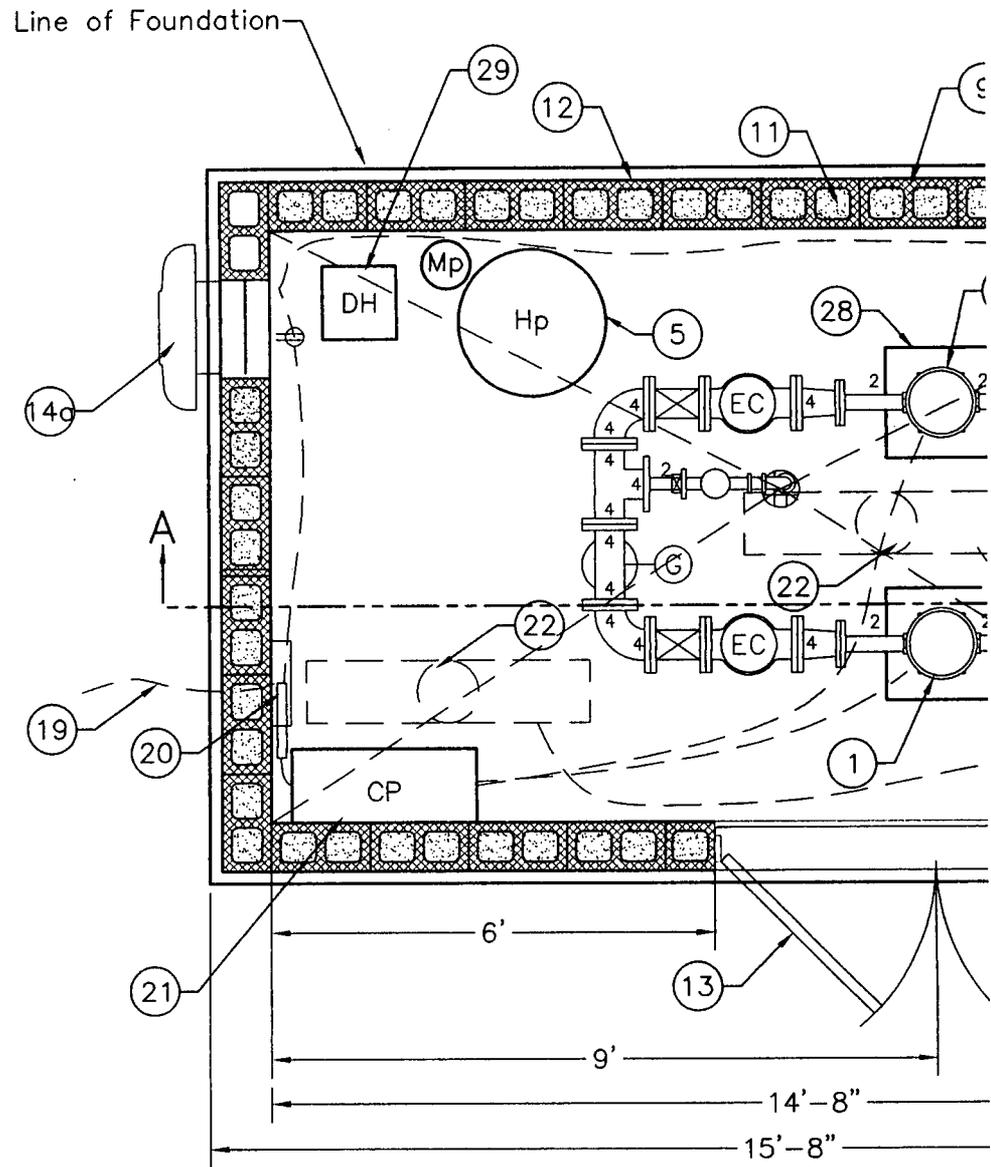
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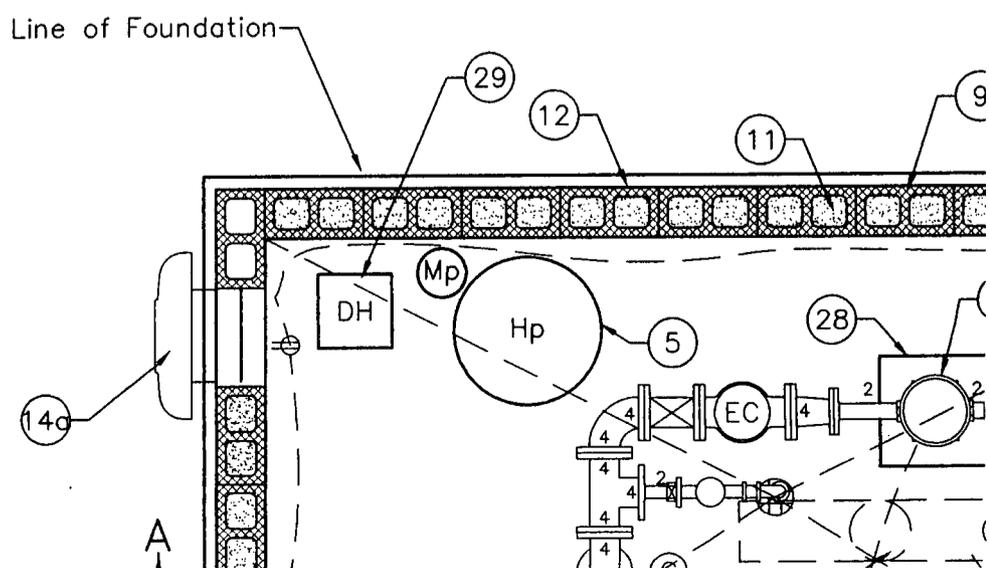
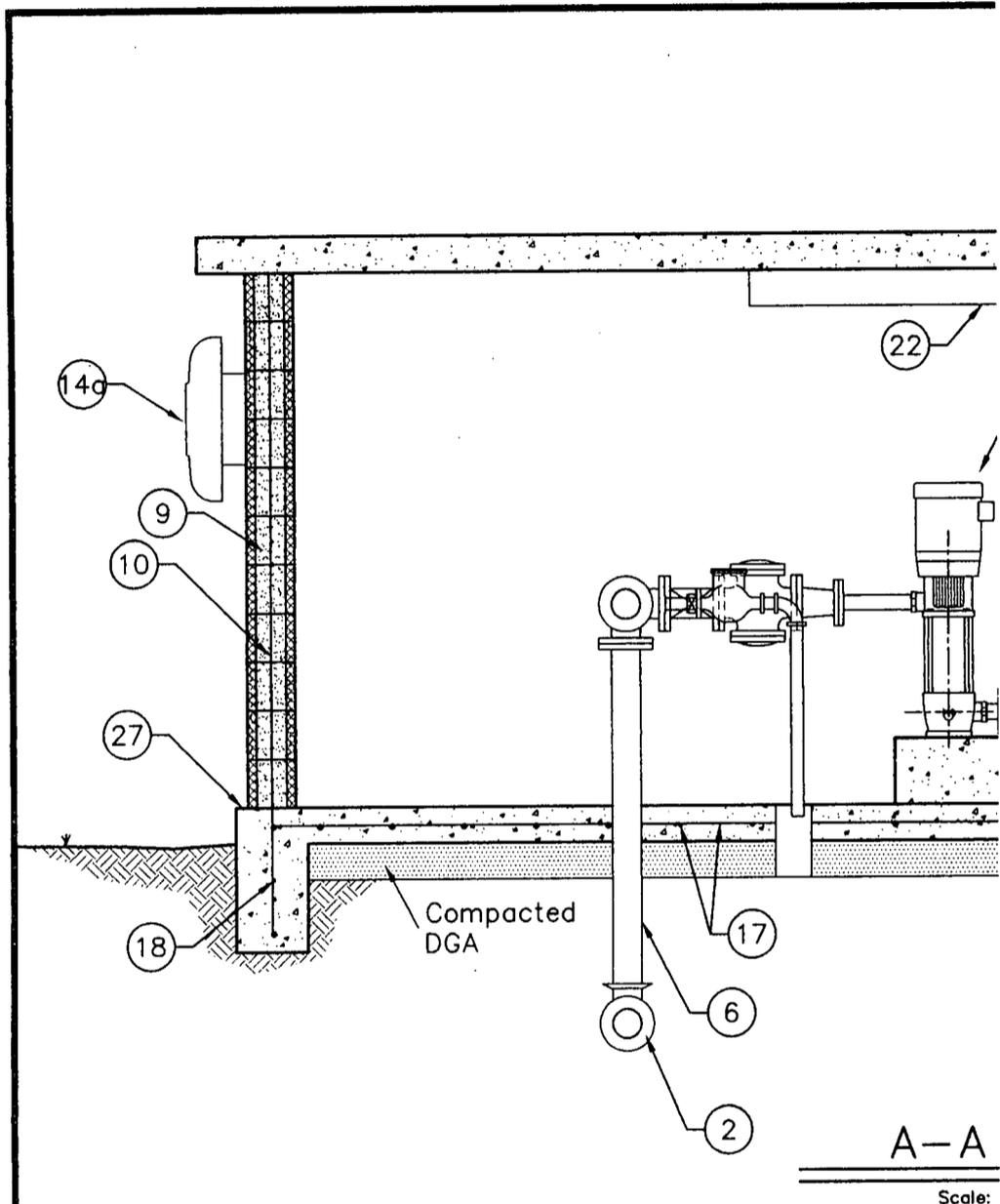


A-A
Scale:



PLAN VIEW
Scale: 1/2"=1'

DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIP



SECTION - VALVE PIT SECTION (C-C)
 N.T.S.

NOTES
 (as shown in Drawing)

It will be included in CONTRACTOR'S Lump Sum

Drainage. ENGINEER may direct
 Tank is sited on a sound site.

valve pit at contract price per foot.
 CONTRACTOR'S Lump Sum bid for tank.

Access for track vehicles (see sheet T-2).
 Provide all needed access.

Lockable by OWNER with padlock for security.

at end of tank.

50 psi live load, 90 deg. hinged door, Bilco or

shop drawing detail.

Detail this sheet. Field locate.

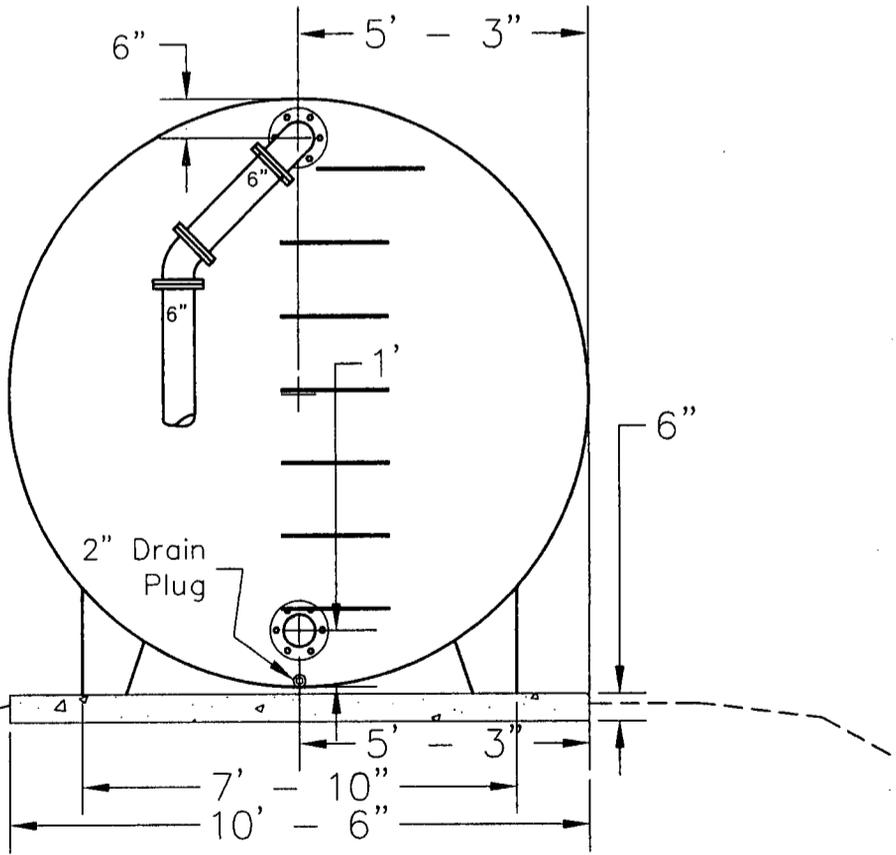
Water line. See technical specifications.

Waterhead and meter base and RTU Telemetry pole.
 50 AMP disconnect and two 110 weatherproof outlets

Provide pressure gage per detail.

Use pipe for buried service

Assumed Ground Line
 Concept

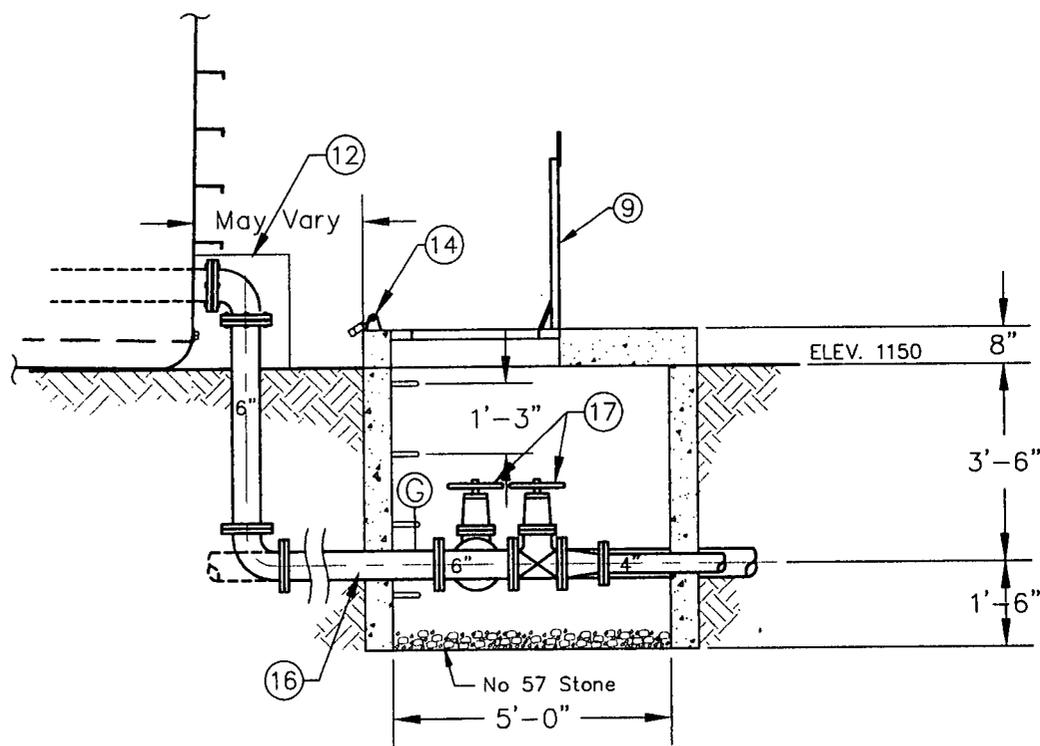


TANK SECTION (A-A)
 SCALE: 3/8" = 1'-0"

<p>Contract No.1</p>		<p>SUMMIT ENGINEERING INC. PIKEVILLE, KY LEXINGTON, KY GRUNDY, VA LOGAN, WV</p>	<p>SCALE: N.T.S.</p>	<p>DATE: 4/14/99</p>
<p>Hall Branch Water Storage Tank Detail Sheet</p>			<p>SHEET: T-1</p>	<p>OF:</p>

DRAWING NO.

PROJECT NO.



SECTION - VALVE PIT SECTION C-C

N.T.S.

NOTES
(as per Drawing)

will be included in CONTRACTOR'S Lump Sum

drainage. ENGINEER may direct
tank is sited on a sound site.

valve pit at contract price per foot.
CONTRACTOR'S Lump Sum bid for tank.

cess for track vehicles (see sheet T-2).
shall provide the access.

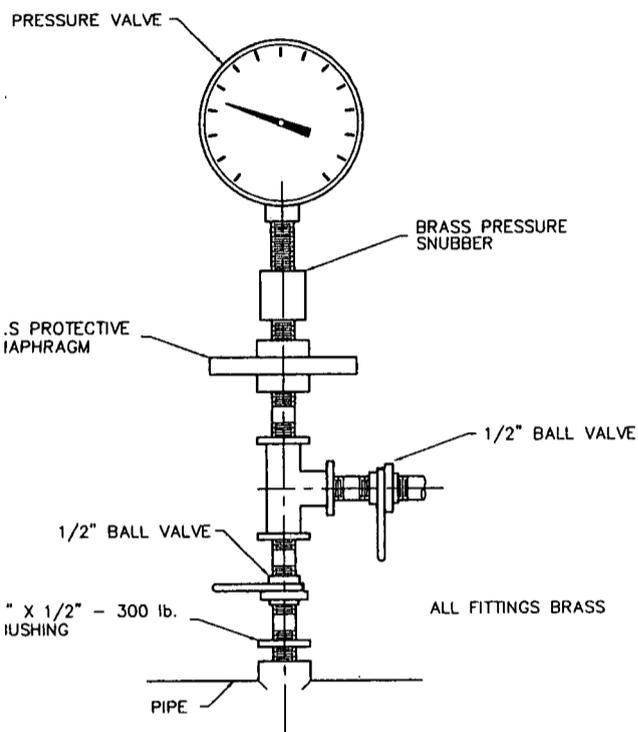
to be secured with padlock for security.

at end of tank.

50 psi live load, 90 deg. hinged door, Bilco or

shop drawing detail.

detail this sheet. Field locate.

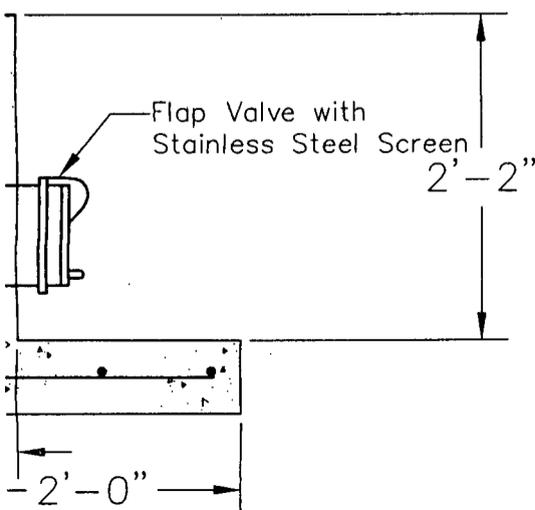


PRESSURE GAGE

CONSTRUCTION NOTES

(Circle indicates note appears in Drawing)

- ① Scope. All work addressed (or implied) hereon shall be included in CONTRACTOR'S bid for "20,000 Gallon Water Storage Tank".
- ② Foundation. Grade tank site to maintain positive drainage. ENGINEER may require CONTRACTOR to excavate test pits to insure that tank is sited on a sound foundation. Construct a reinforced concrete slab as detailed.
- ③ Pipe. Line contract includes water supply pipe to valve pit at contract price. All other piping on this plan sheet included in CONTRACTOR'S Lump Sum bid.
- ④ Access. CONTRACTOR shall construct 10' wide access for track vehicles (see detail). At completion of tank installation, CONTRACTOR shall seed the access.
- ⑤ Ventilator. Ventilate with pest screen.
- ⑥ Manway. Manway with spring loaded hatch. Provide OWNER with padlock for security.
- ⑦ Manway. Bolted.
- ⑧ Liquid Level Indicator. Mount liquid level indicator at end of tank.
- ⑨ Access Hatch. Aluminum access hatch, 3' x 3', 150 psi live load, 90 deg. live load equal.
- ⑩ Steps. Provide steps to access manway. Submit shop drawing detail. Provide OSHA approved safety cage on all steps.

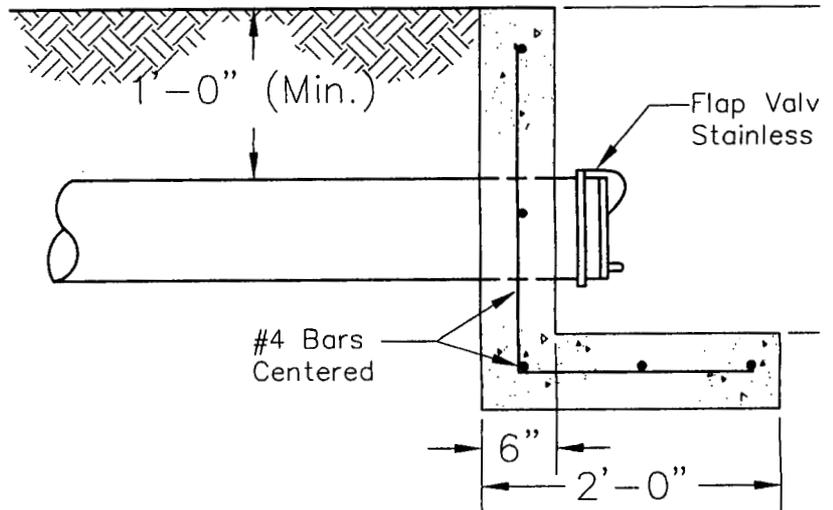
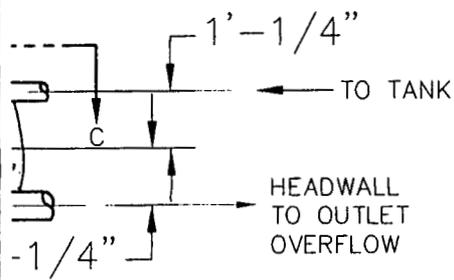


HEADWALL - DETAIL ③

PRESSURE

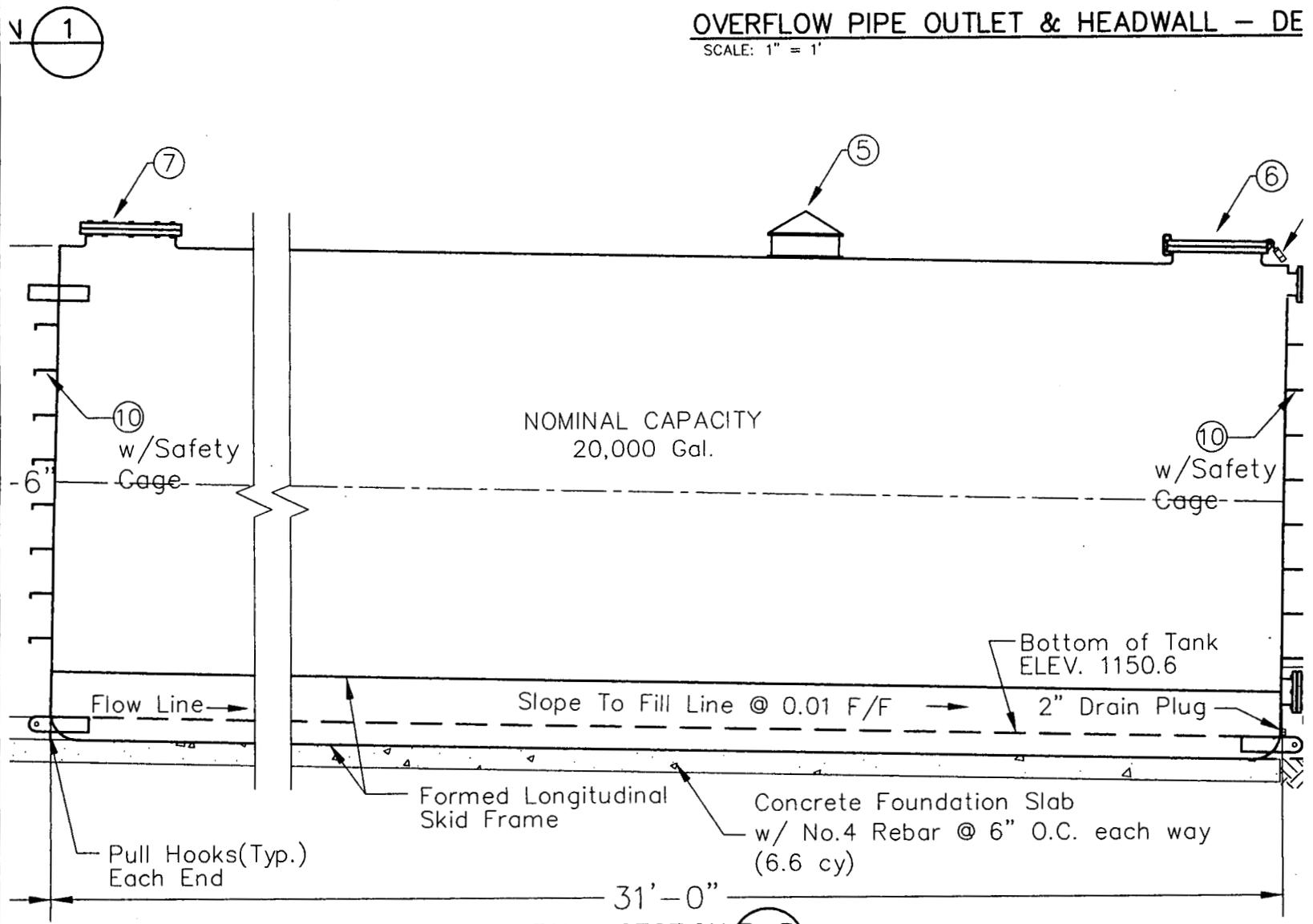
SITE ARRANGEMENT

SCALE: 1" = 10'



OVERFLOW PIPE OUTLET & HEADWALL - DE

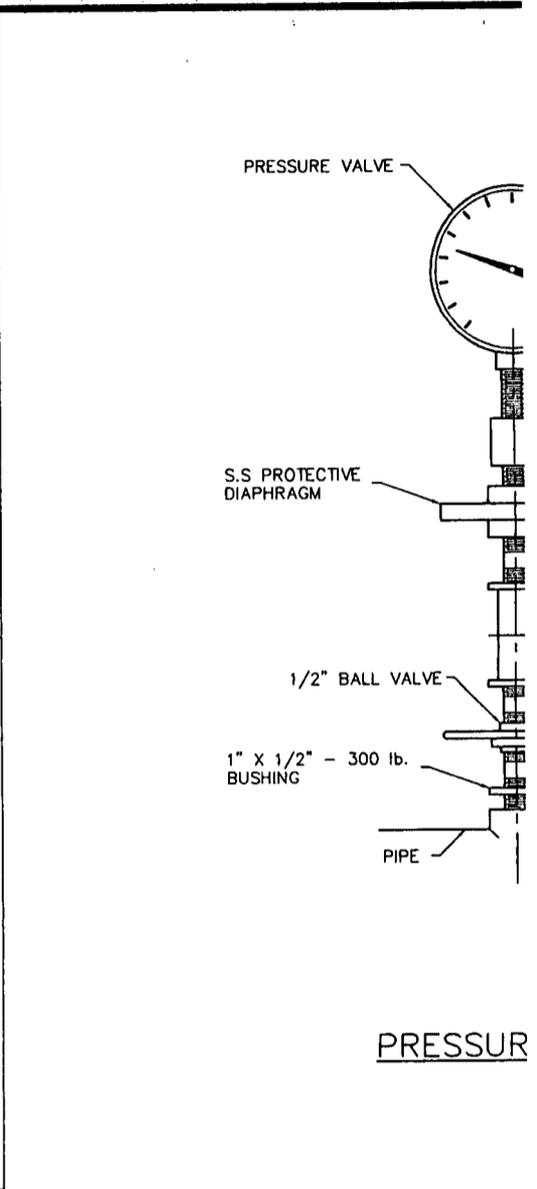
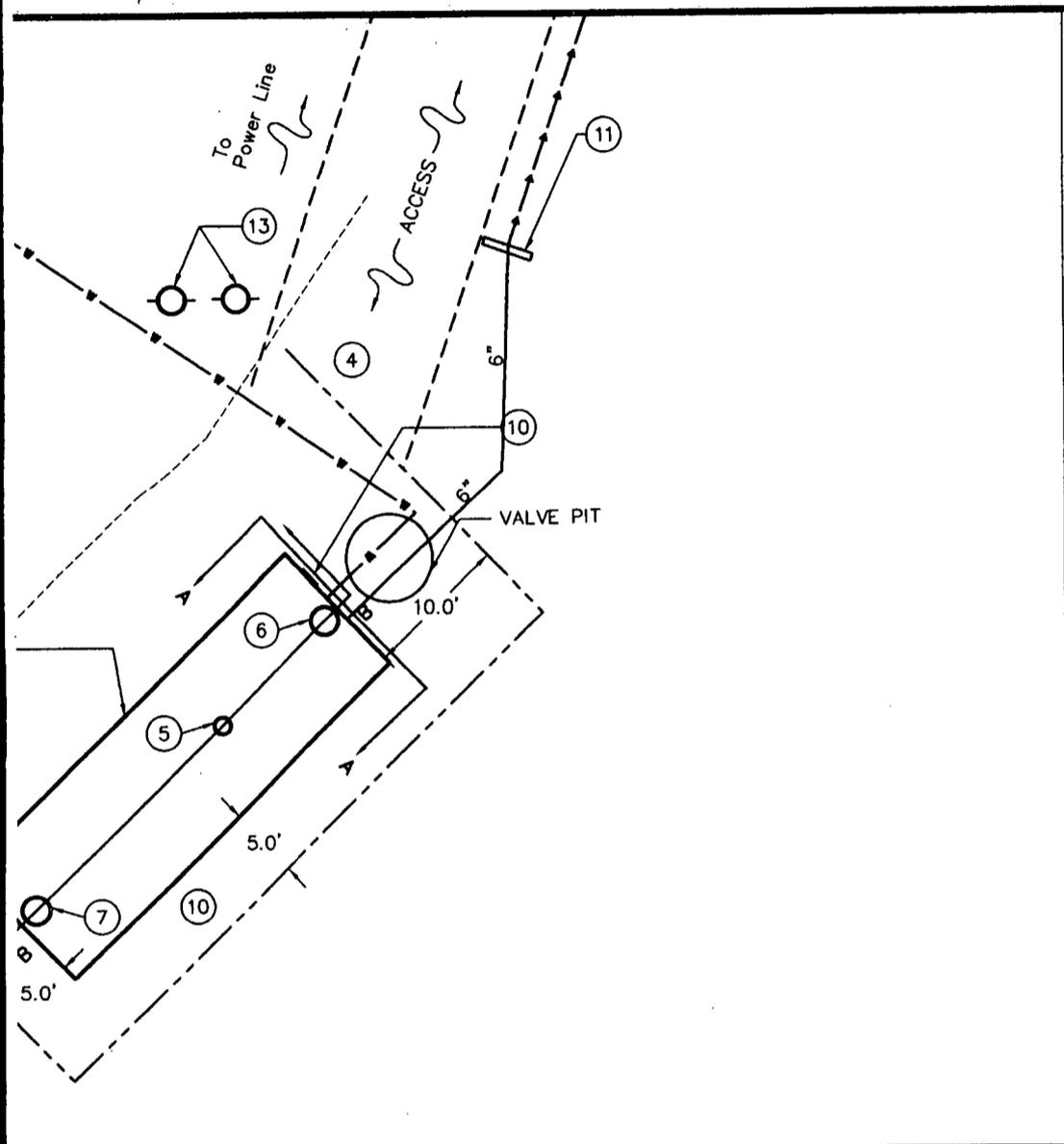
SCALE: 1" = 1'



TANK SECTION (B-B)

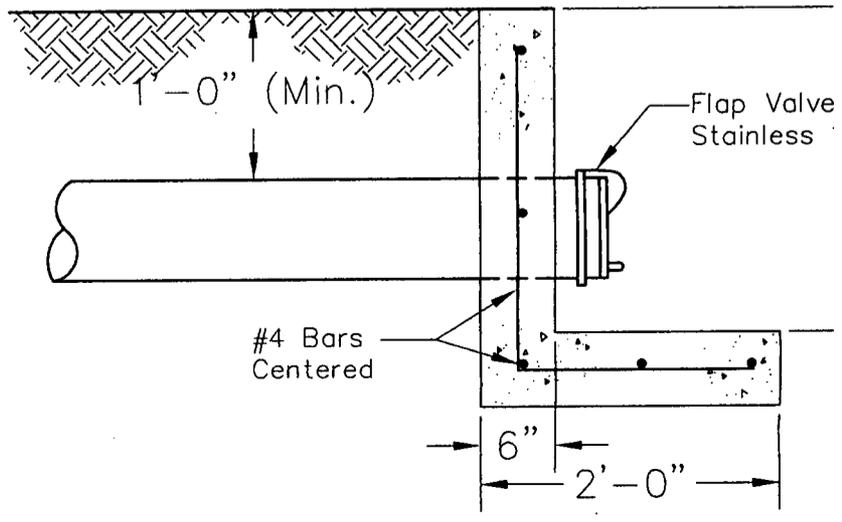
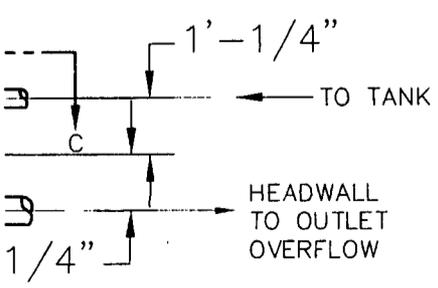
SCALE: 3/8" = 1'-0"

REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DRAWN BY:	C. Schneider
					CHECKED BY:	K. Howard
					APPROVED BY:	K. Howard



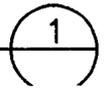
SITE ARRANGEMENT

SCALE: 1" = 10'



OVERFLOW PIPE OUTLET & HEADWALL - DET

SCALE: 1" = 1'

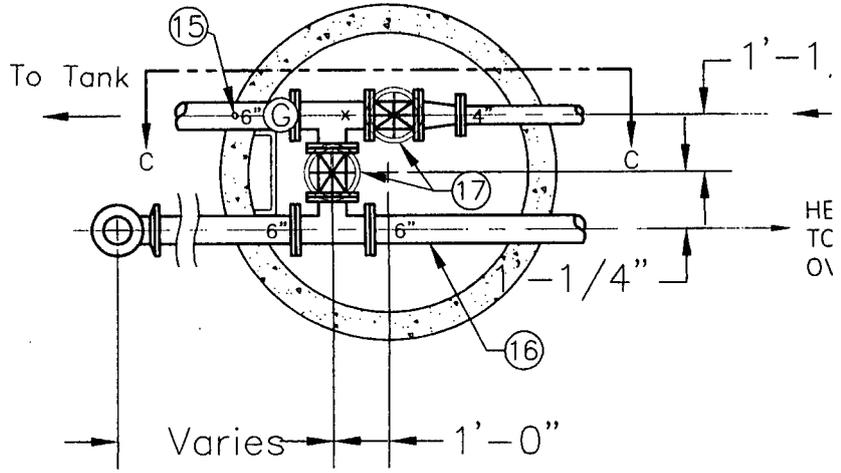


TOE OF BANK
EXCAVATION
SEE SHEET T-2
FOR ADDITIONAL
SITE INFORMATION

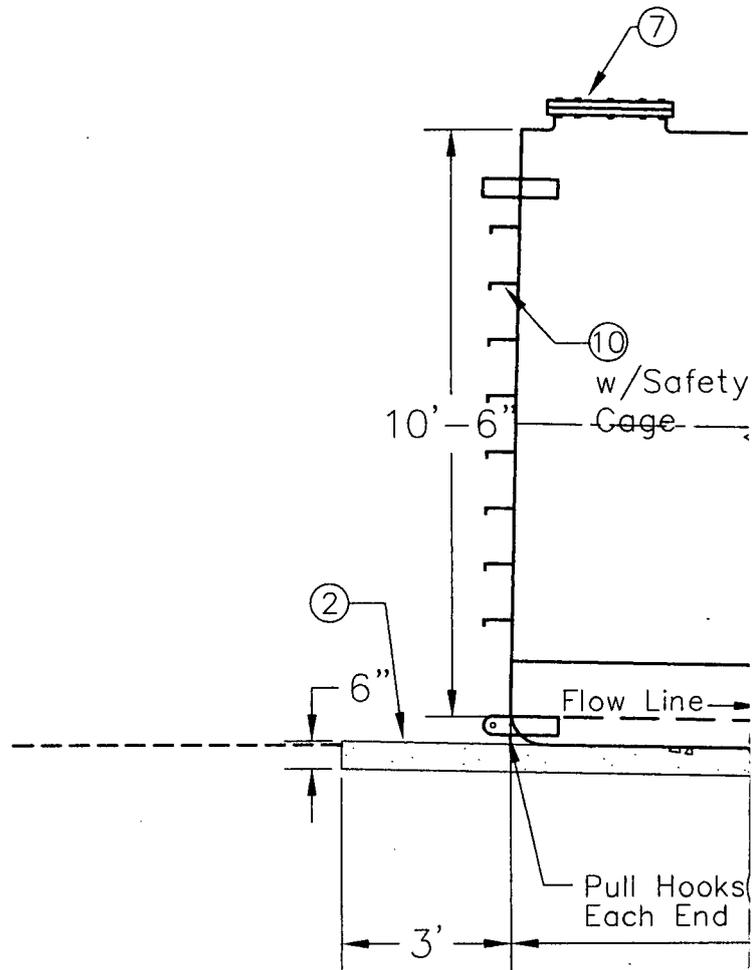


SITE ARRANGEM

SCALE: 1" = 10'

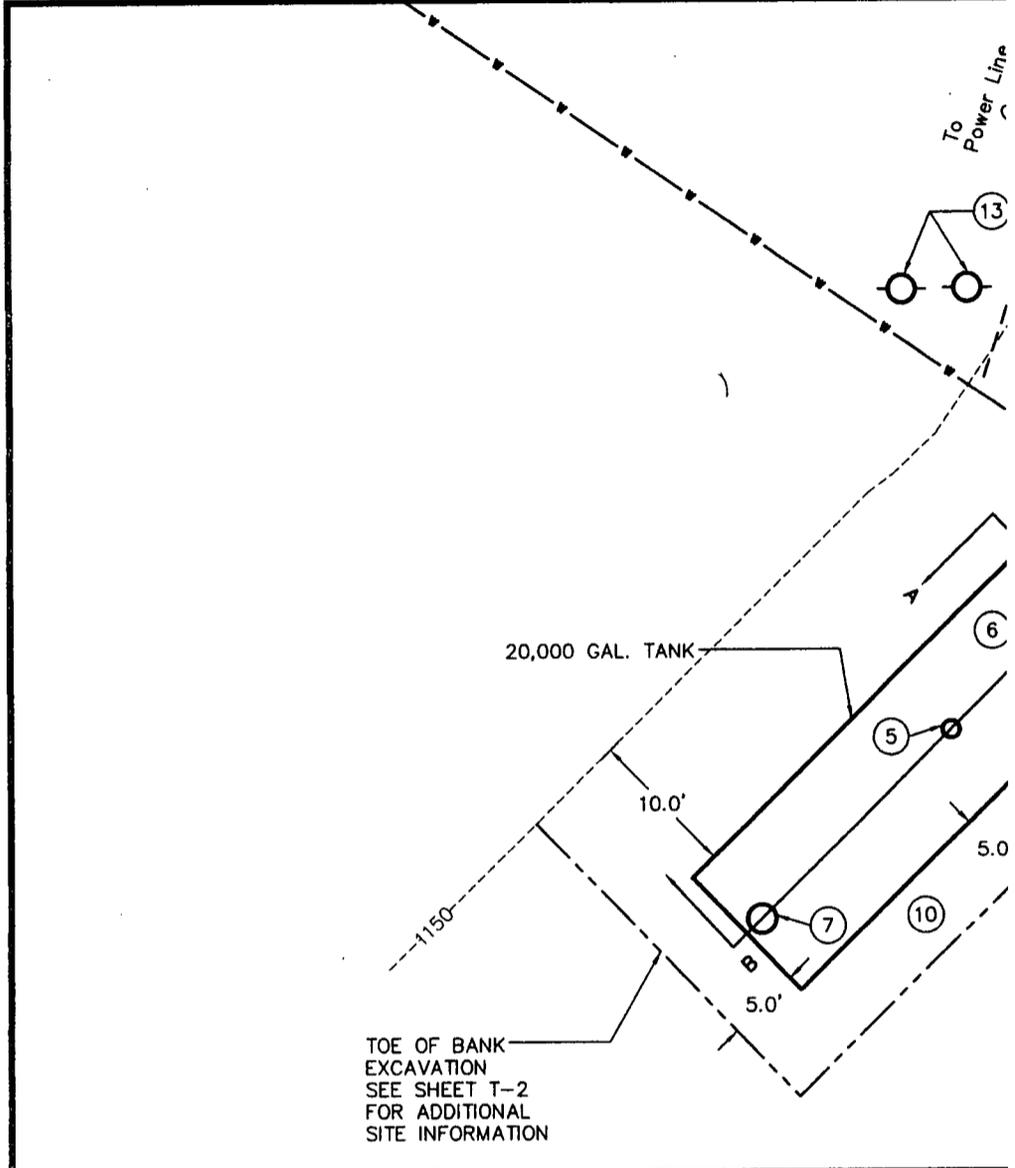


DETAIL- VALVE PIT PLAN (1)
N.T.S.



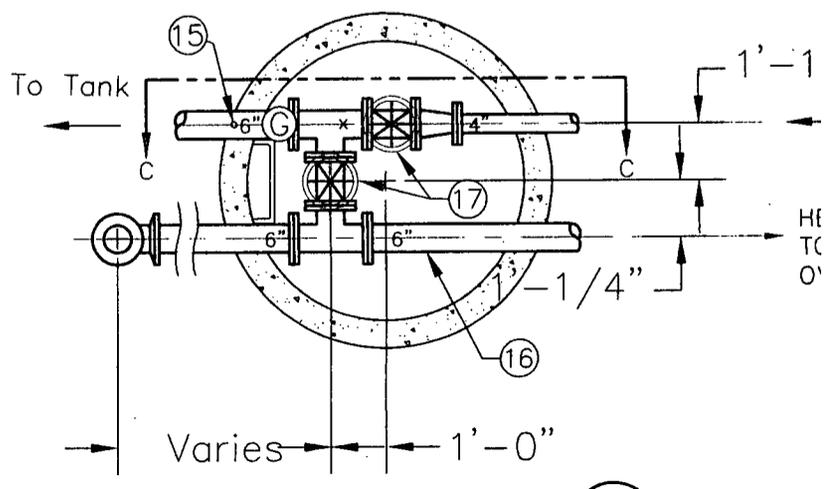
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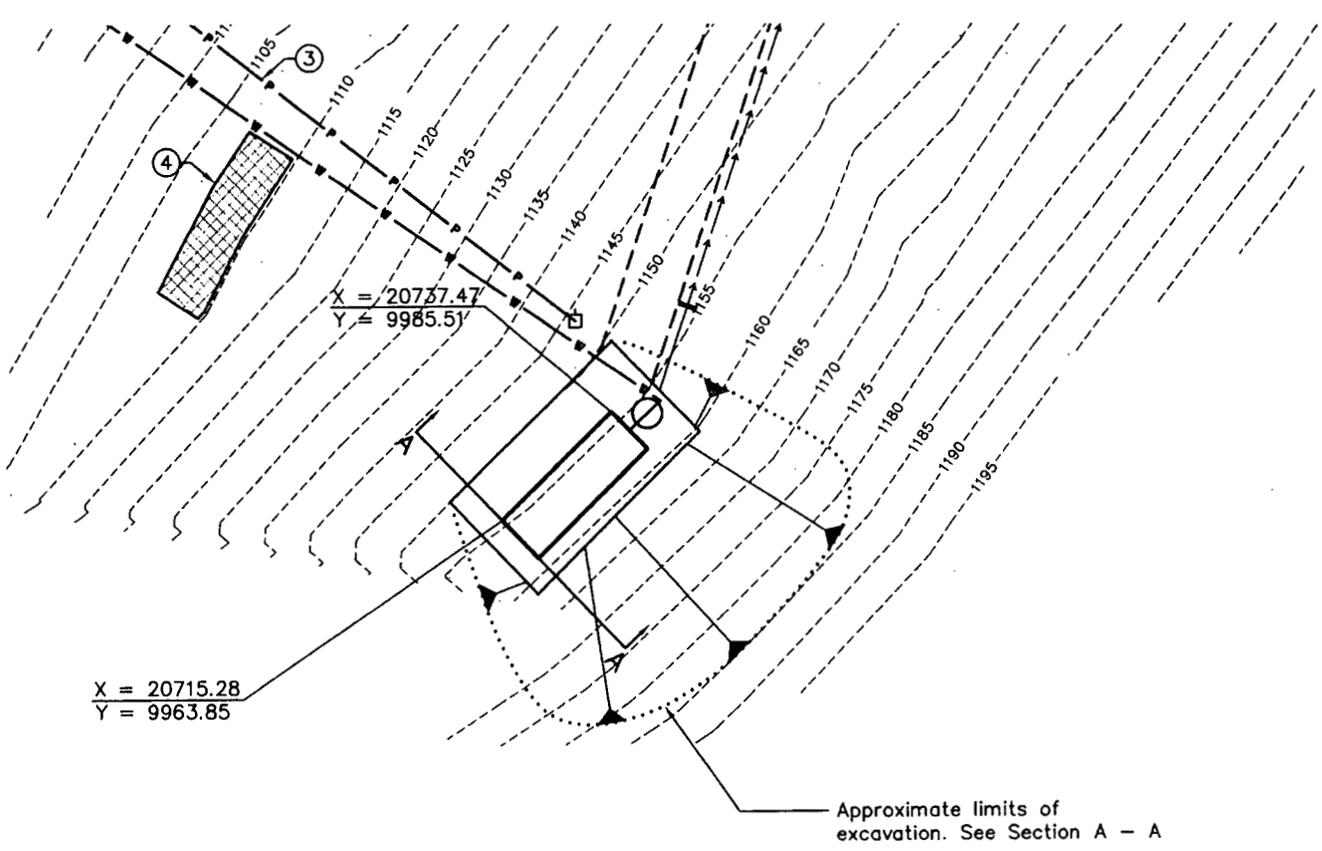
SITE ARRANGEM

SCALE: 1" = 10'



DETAIL - VALVE PIT PLAN (1)

N.T.S.



- ① Track Vehicle Access - Remove trees along designated access and skid tank in place. Upon completion of construction, grade access to create ditch as shown and revegetate in accordance with seeding specifications.
- ② Water Line - Construct water line as shown. See Note 3 Sheet T-1 concerning contract responsibilities.
- ③ Power - Contractor to have single phase power extended to tank site by AEP. Also see Note 13 Sheet T-1.
- ④ Waste Area - Waste area for excavated material from tank site. Grade to a stable configuration. Revegetate.

Contract No.1

Hall Branch
Water Storage Tank
Tank Site Plan



SUMMIT
ENGINEERING
INC.

PIKEVILLE, KY
LEXINGTON, KY
GRUNDY, VA
LOGAN, WV

SCALE: 1"=30' DATE: 4/14/99

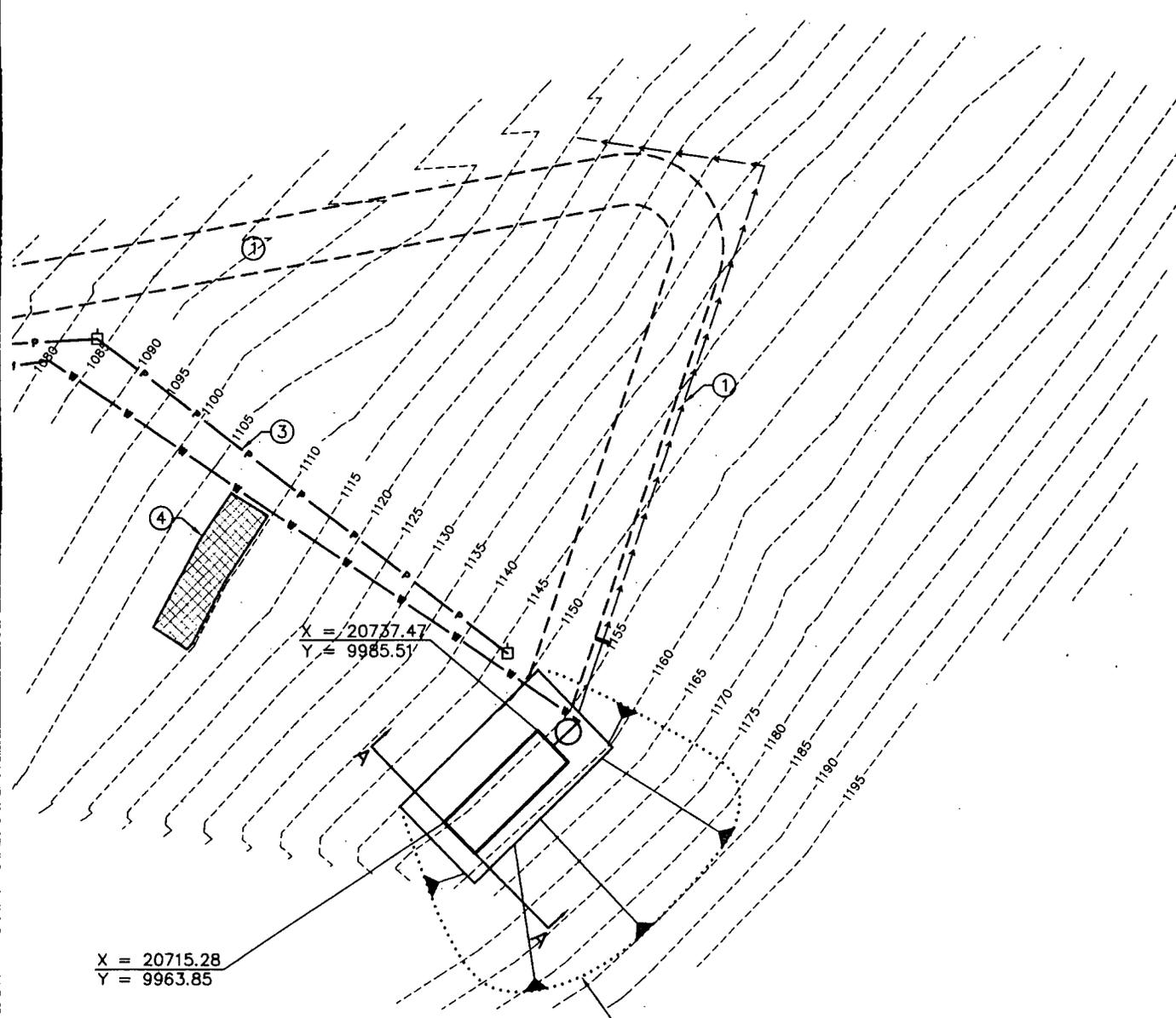
SHEET:

T-2

OF:

DRAWING NO.

PROJECT NO.

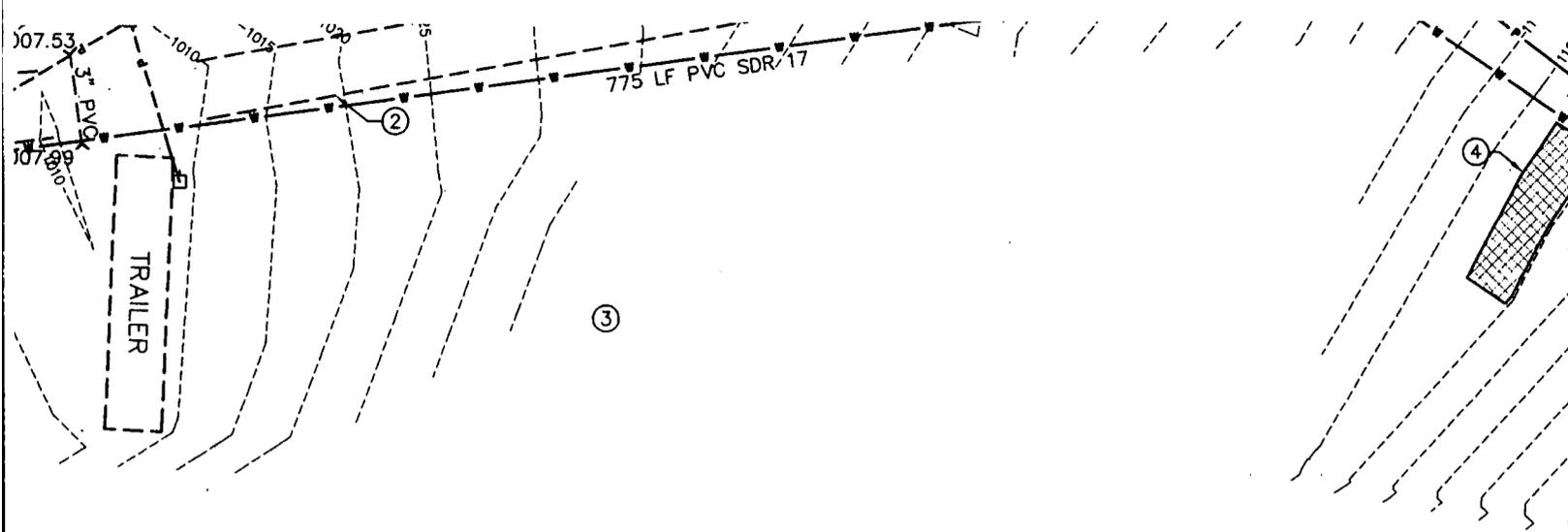


X = 20715.28
Y = 9963.85

X = 20737.47
Y = 9985.51

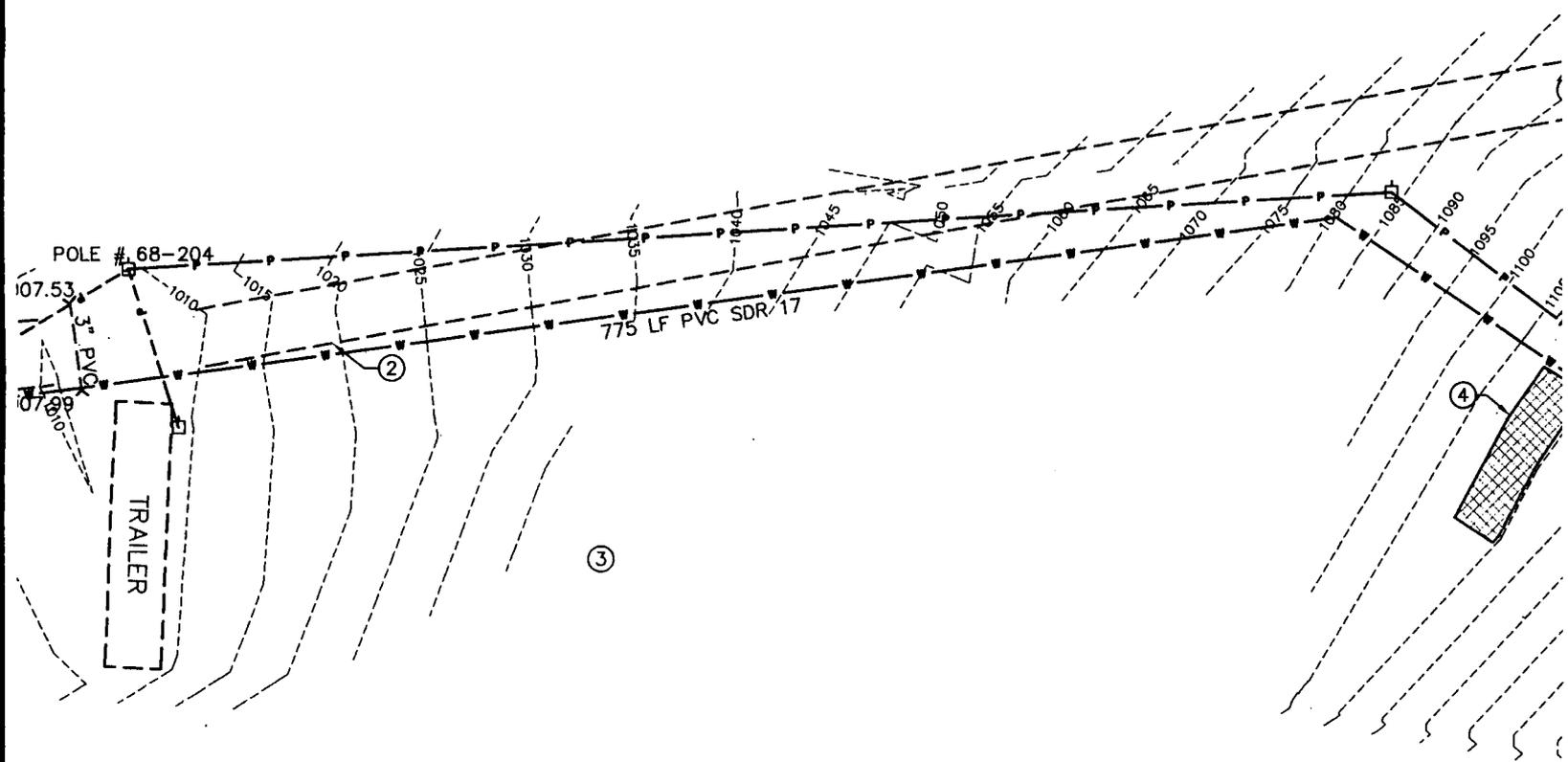
Approximate limits of excavation. See Section A - A

- ① Track Vehicle Access - Remove trees along designated access and skid tank in place. Upon completion of construction, grade access to create ditch as shown and revegetate in accordance with seeding specifications.
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- ③ Power - Contractor to have single phase power extended to tank site by AEP. Also see Note 13 Sheet T-1.

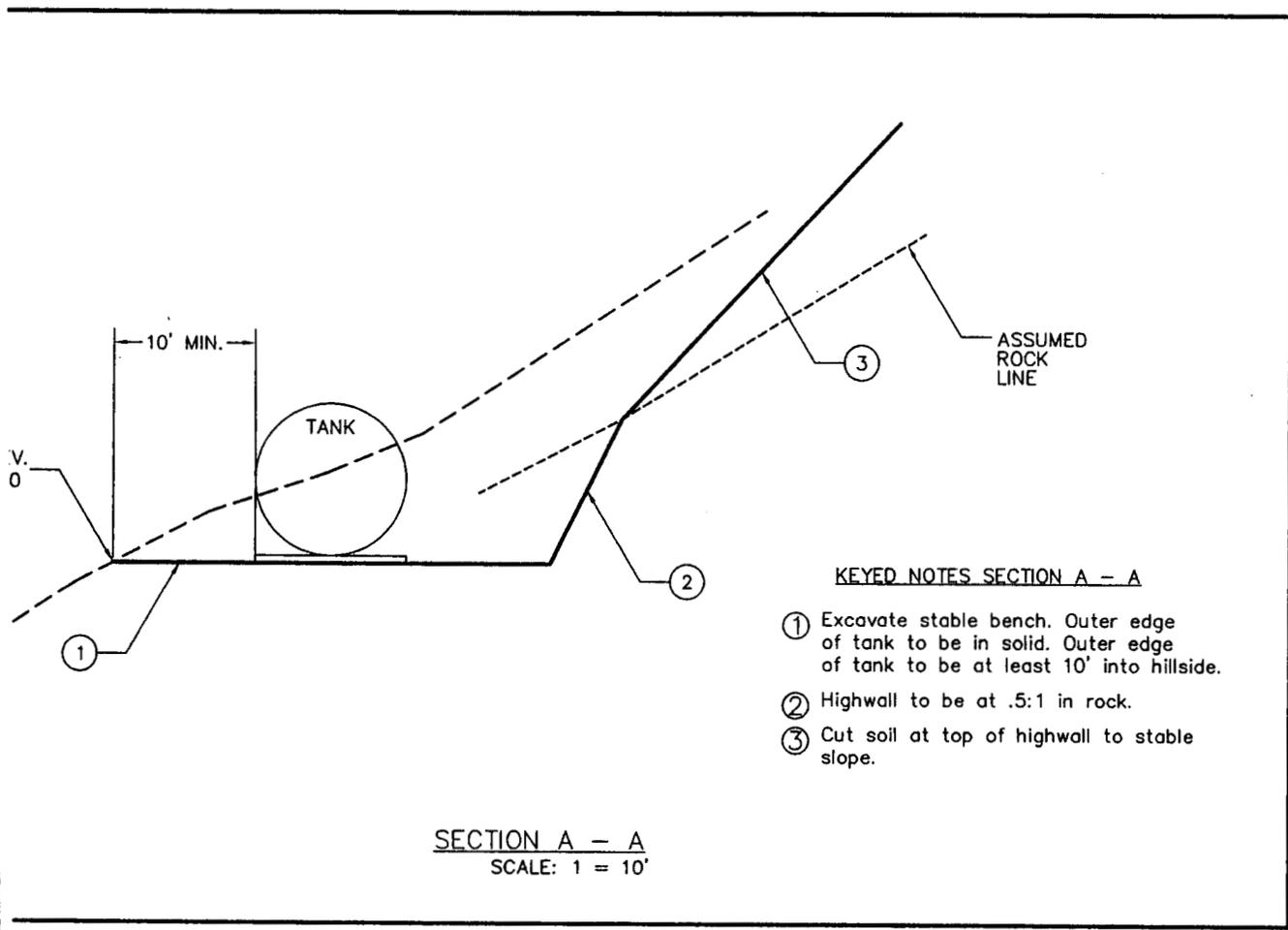
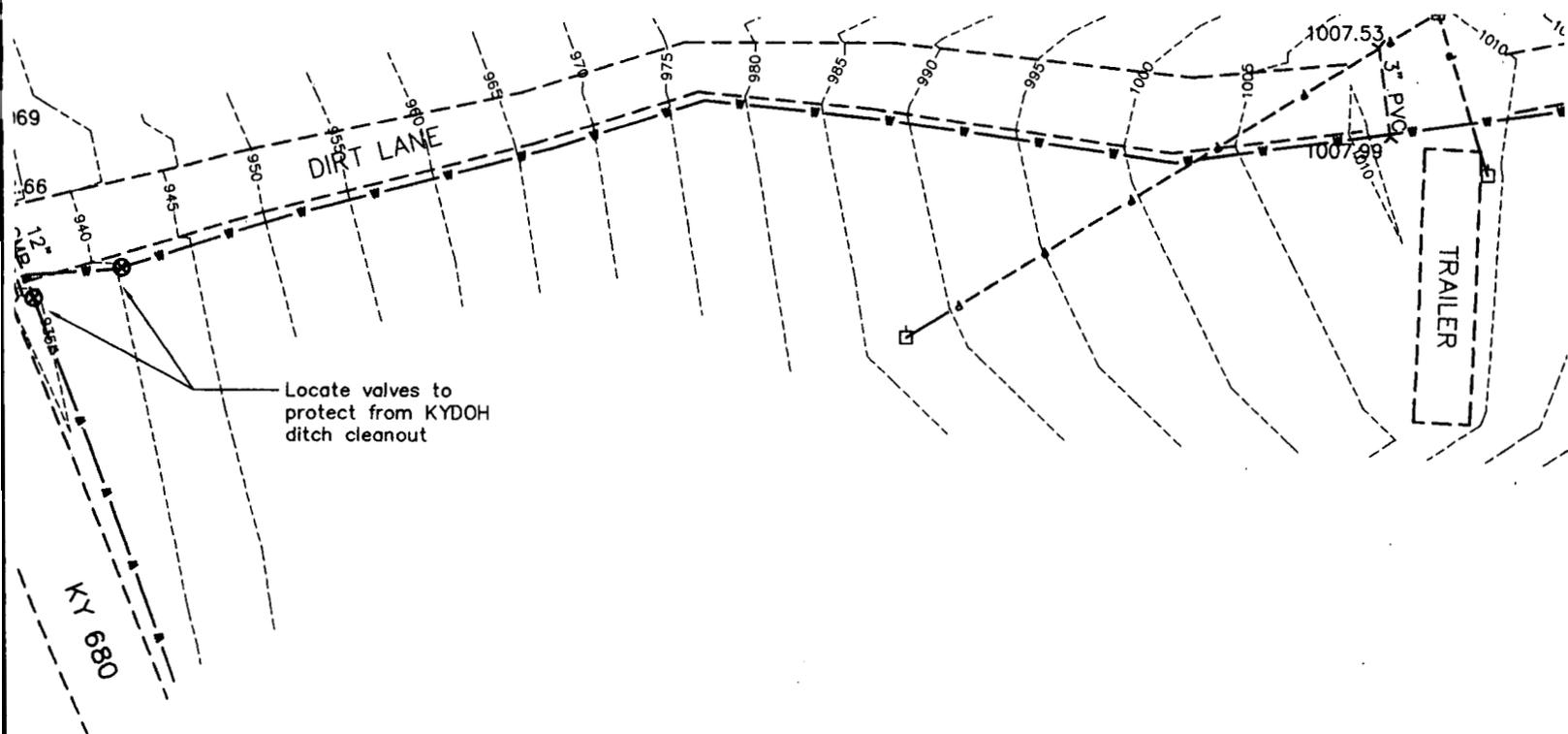


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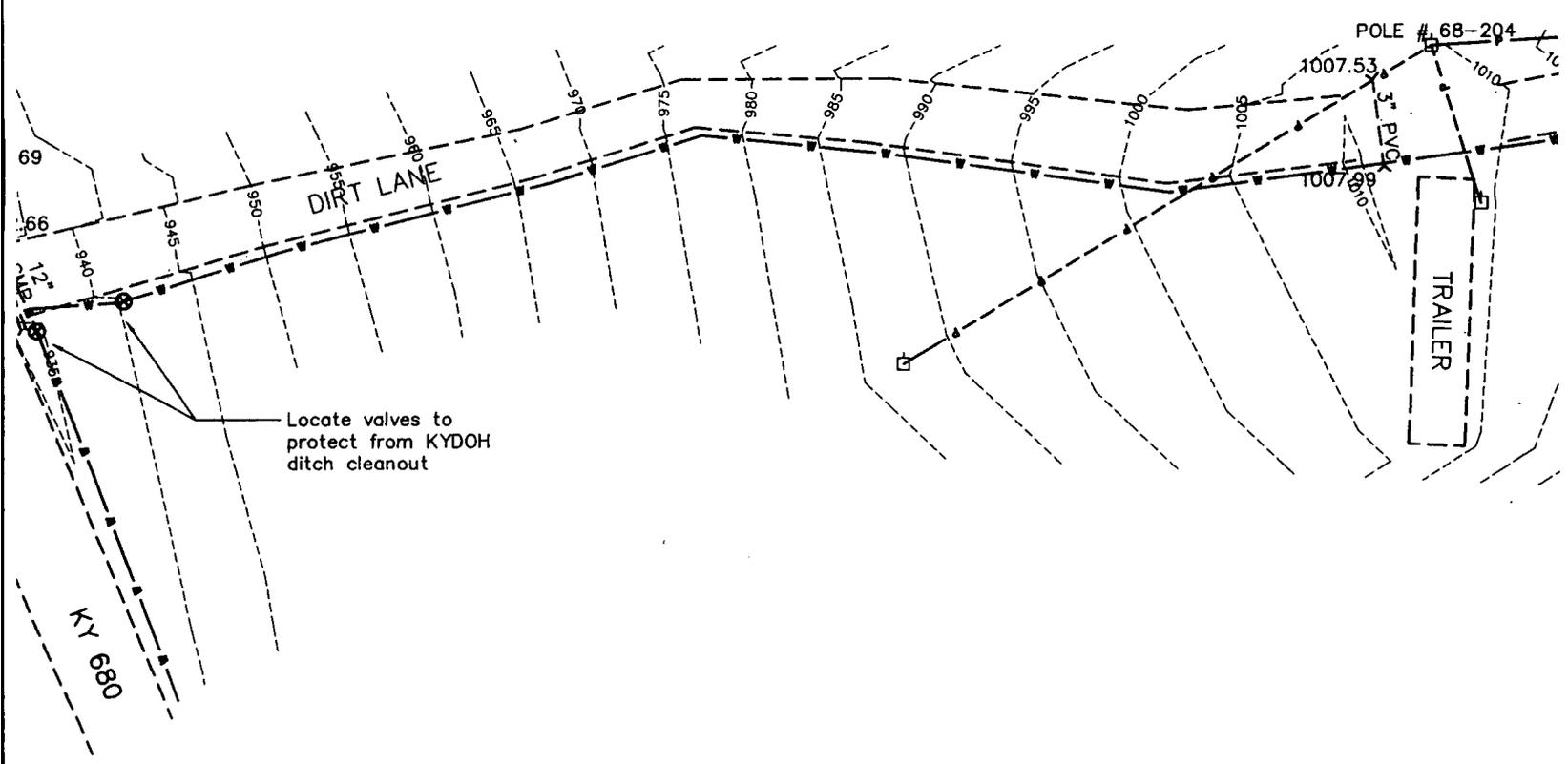
Beaver-Elkhorn Water District
HALL BRANCH WATER LINE EXTENSION
 Floyd County, Kentucky



X = 20715.28
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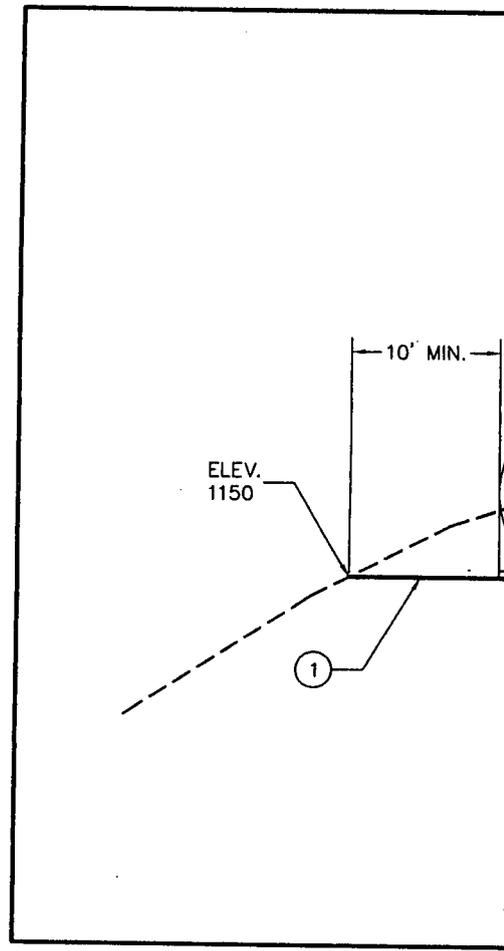
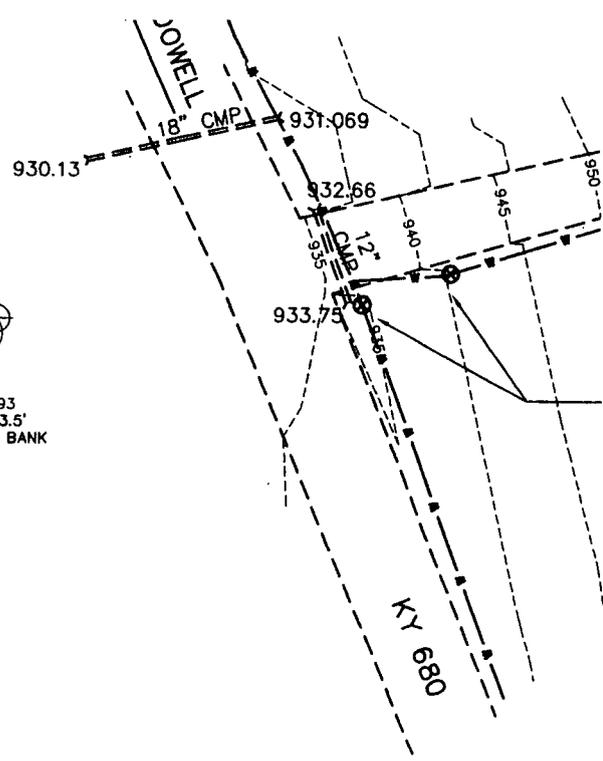
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					C. Schneider
					CHECKED BY: K. Howard
					APPROVED BY: K. Howard



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BM
ELEV 932.51
USGS DISC W1278
IN ROCK WALL

STA 1
N 10,000
E 20,000
ELEV. 929.93
T/T BAR 3.5'
OFF CREEK BANK



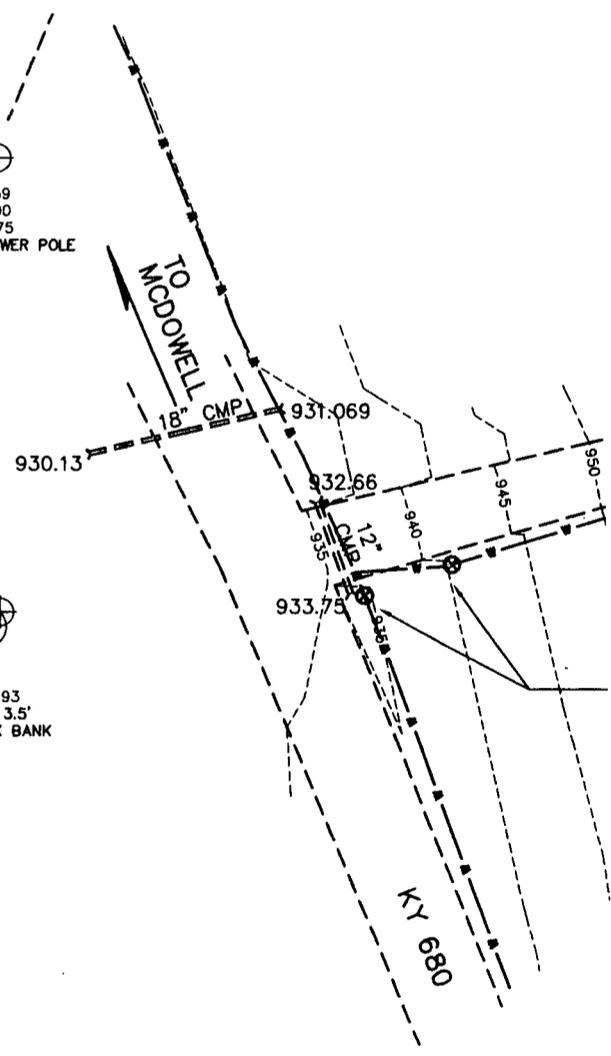
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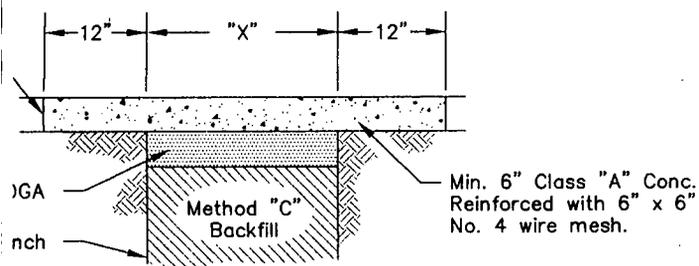
111

BM
ELEV 932.51
USGS DISC W127B
IN ROCK WALL

STA 2
N 10,090.59
E 20,000.00
ELEV 934.75
P.K. IN POWER POLE

STA 1
N 10,000
E 20,000
ELEV. 929.93
T/T BAR 3.5'
OFF CREEK BANK





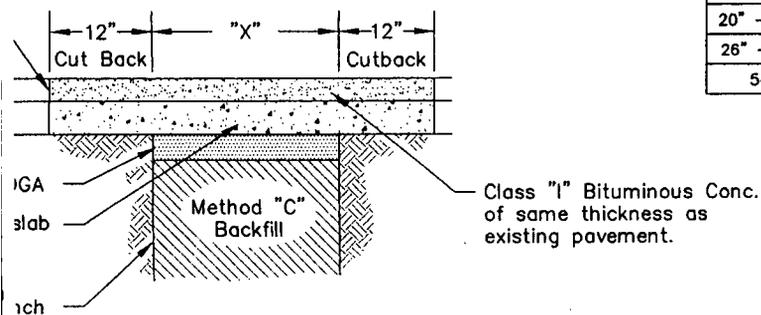
Min. 6" Class "A" Conc.
Reinforced with 6" x 6"
No. 4 wire mesh.

TRENCH
WIDTH TABLE

Pipe Size	"X" Unsupported Trench	"X" Trench Box
< 4"	12"	N.A.
4" - 12"	30"	42"
14" - 18"	36"	48"
20" - 24"	42"	52"
26" - 36"	54"	68"
54"	78"	84"

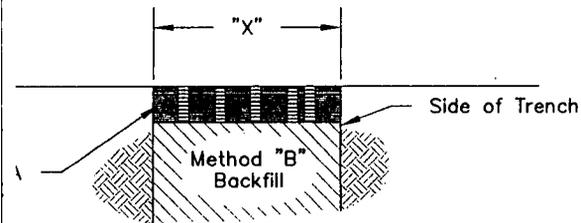
CONCRETE PAVEMENT REPLACEMENT

and Squared Edges



Class "1" Bituminous Conc.
of same thickness as
existing pavement.

BITUMINOUS PAVEMENT REPLACEMENT



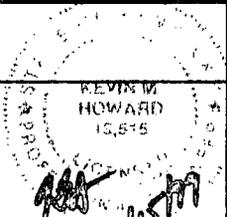
GRAVEL SURFACE REPLACEMENT

PIPE REPLACEMENT METHODS

N.T.S.

Utility Installation Details

Details for
Excavating, Bedding and
Backfilling for Pipe Utilities



SUMMIT
ENGINEERING
INC.

PIKEVILLE, KY
LEXINGTON, KY
GRUNDY, VA
LOGAN, WV

SCALE: N.T.S. DATE: 4/14/99

SHEET:

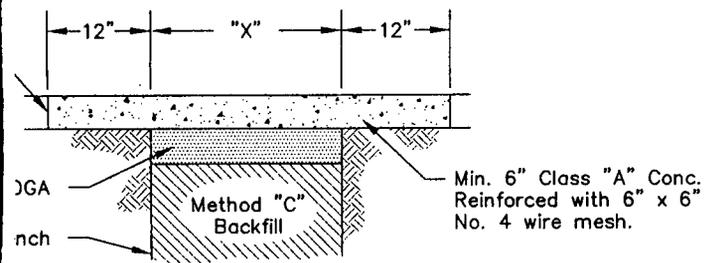
D-1

OF:

DRAWING NO.

PROJECT NO.

joint or pavement

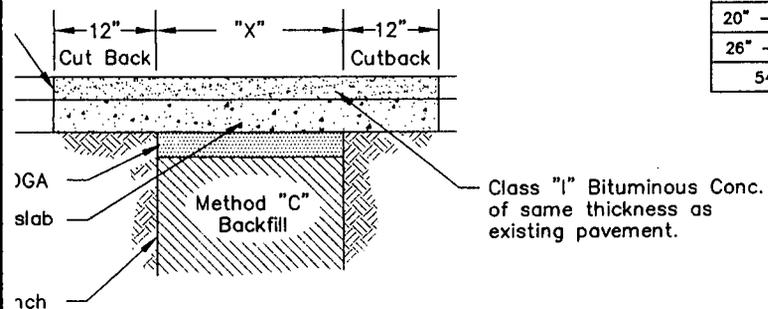


TRENCH WIDTH TABLE

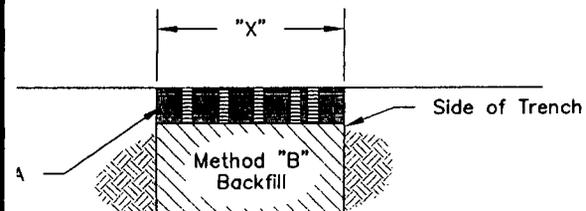
Pipe Size	"X" Unsupported Trench	"X" Trench Box
< 4"	12"	N.A.
4" - 12"	30"	42"
14" - 18"	36"	48"
20" - 24"	42"	52"
26" - 36"	54"	68"
54"	78"	84"

CONCRETE PAVEMENT REPLACEMENT

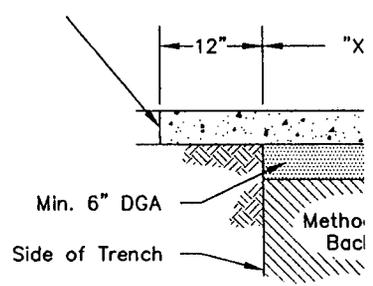
and Squared Edges



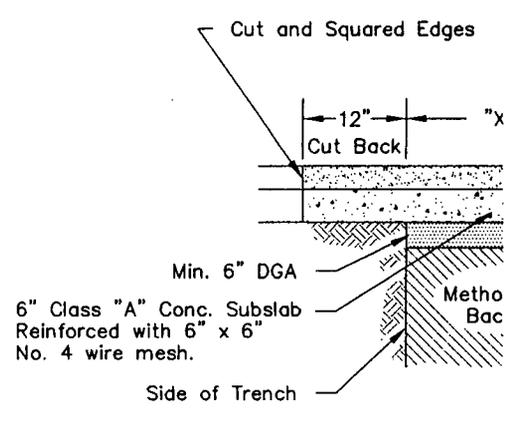
BITUMINOUS PAVEMENT REPLACEMENT



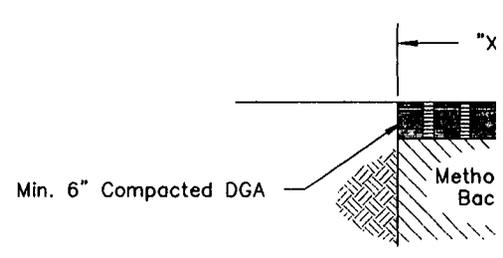
No Alternate!
to be left
ASTM D-698
ASTM D-698



CONCRETE PAVEMENT



BITUMINOUS PAVEMENT



GRAVEL SURFACE

PAVEMENT REPLACEMENT

Beaver-Elkhorn Water District
HALL BRANCH WATER LINE EXTENSION
Floyd County, Kentucky

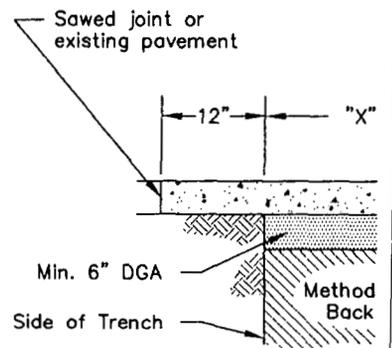
Alternate!

o Alternate!

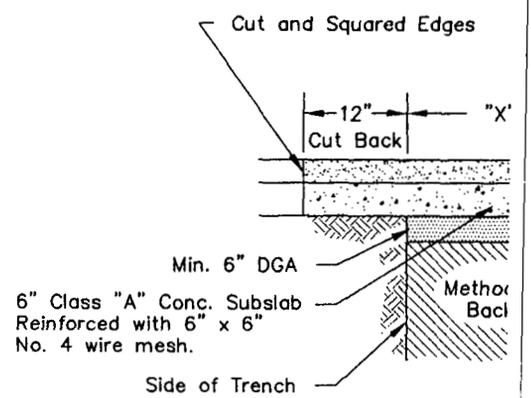
r be left

STM D-698

STM D-698

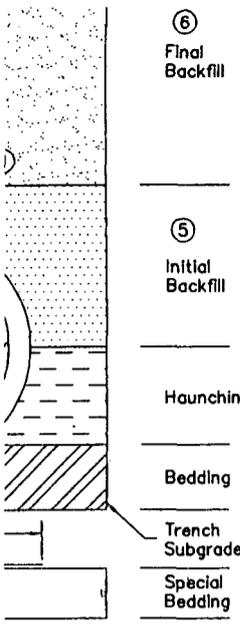


CONCRETE PAVEME



BITUMINOUS PAVEM





KY DOH No. 9 Crushed Stone or KY DOH Sand for Pipe Bedding (804.07). No Alternate!

- ⑥ Final Backfill – See Pavement Replacement Detail for Appropriate Method
 - Method 'A' – Backfill placed in 24" lifts, and mechanically compacted. Trench may be left (Open Areas) heaped until seeding. No rock larger than 1/2 cubic foot allowed.
 - Method 'B' – Backfill placed in 6" lifts, and mechanically compacted to 95% of ASTM D-698 (Graveled Areas) Final 6" of Backfill to be DGA.
 - Method 'C' – Backfill placed in 6" lifts, and mechanically compacted to 100% of ASTM D-698 (Paved Areas) Final 6" of Backfill to be DGA.
 - Alternate Method 'C' – Final backfill shall be KYDOH No. 9 Crushed Stone.

- ⑦ Cover – 30" Minimum cover for Water Mains, Water Service Lines and Sanitary Sewers, except in KYDOH right of way. Provide 36" of cover on highway right of way.
24" Minimum cover for Storm Sewers, Telephone Conduit and Electrical Conduit.

- ⑧ Marking Tape – "Caution Buried Water"

Special Pipe Bedding Detail

- ⑨ Soft, Mucky Subgrade shall be overexcavated to the depth designated by the Engineer.
- ⑩ Install Geotextile Type III.
- ⑪ Install Bedding Stone to depth of overexcavation.
- ⑫ Close Geotextile envelope with one (1) foot of overlap.
- 13 Order – Special Pipe Bedding shall only be installed on written order of the Engineer.

BEDDING and BACKFILL DETAIL

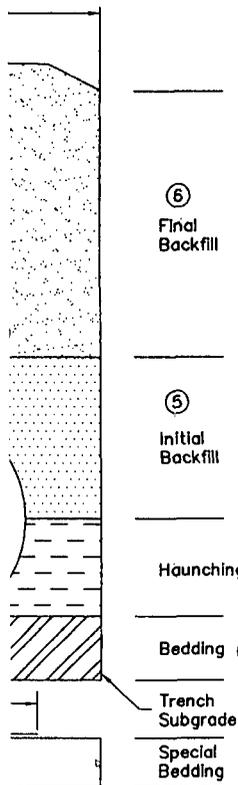
OF REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DRAWN BY: C. Schneider
					CHECKED BY: K. Howard
					APPROVED BY: K. Howard

- ① Trace Wire - No. 12 copper trace wire required for all plastic pipe. Extend to inside of valve boxes, pump stations, etc.
- ② Surface Replacement - For construction in existing streets and roads see pavement replacement details. For construction in advance of new roadway construction last lift of backfill shall be 6" dense graded aggregate. For open areas, heap slightly and seed in accordance with specifications.
- ③ Bedding - KYDOH No. 9 Crushed Stone
- ④ Haunching - Ductile Iron and Corrugated Metal Pipes
Select Fine Soil Free of Stones larger than 3/4" in diameter (Hand tamped).
Plastic Pipes
KY DOH No. 9 Crushed Stone or KY DOH Sand for Pipe Bedding (804.07). No Alternate!
- ⑤ Initial Backfill - Ductile Iron and Corrugated Metal Pipes
Select Fine Soil Free of Stones larger than 3/4" in diameter (Hand tamped).
Plastic Pipes
KY DOH No. 9 Crushed Stone or KY DOH Sand for Pipe Bedding (804.07). No Alternate!
- ⑥ Final Backfill - See Pavement Replacement Detail for Appropriate Method

Method 'A' - Backfill placed in 24" lifts, and mechanically compacted. Trench may be left (Open Areas) heaped until seeding. No rock larger than 1/2 cubic foot allowed.
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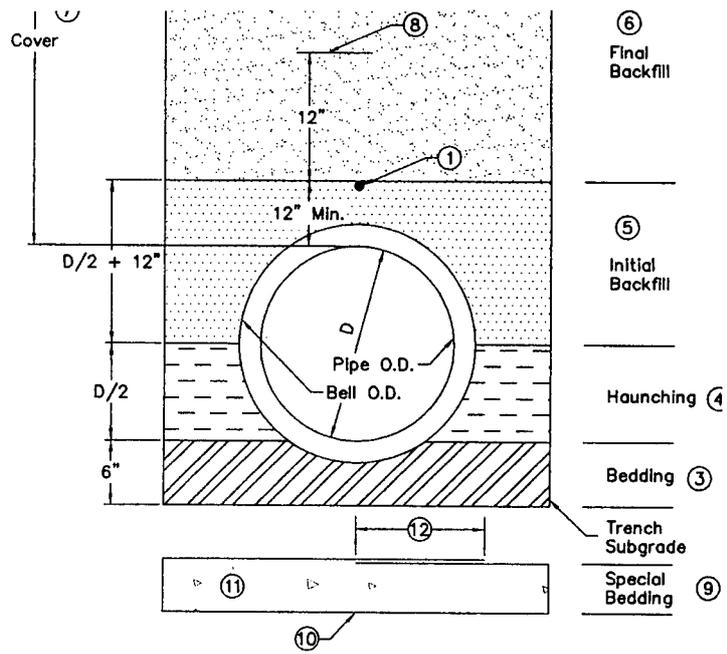
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- ⑧ Marking Tape - "Caution Buried Water"
- ⑨ Soft, Mucky Subgrade shall be overexcavated to the depth designated by the Engineer.
- ⑩ Install Geotextile Type III.
- ⑪ Install Bedding Stone to depth of overexcavation.
- ⑫ Close Geotextile envelope with one (1) foot of overlap.
- ⑬ Order - Special Pipe Bedding shall only be installed on written order of the Engineer.

Special Pipe Bedding Detail



BEDDING and BACKFILL DETAIL

X:\97 - 99 Civil\99-505 HALL BRANCH WATER (BEAVER)\Drawings-Allison\Water Details.dwg Tue Apr 13 09:05:47 1999 -A.H.



DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DATE	DES

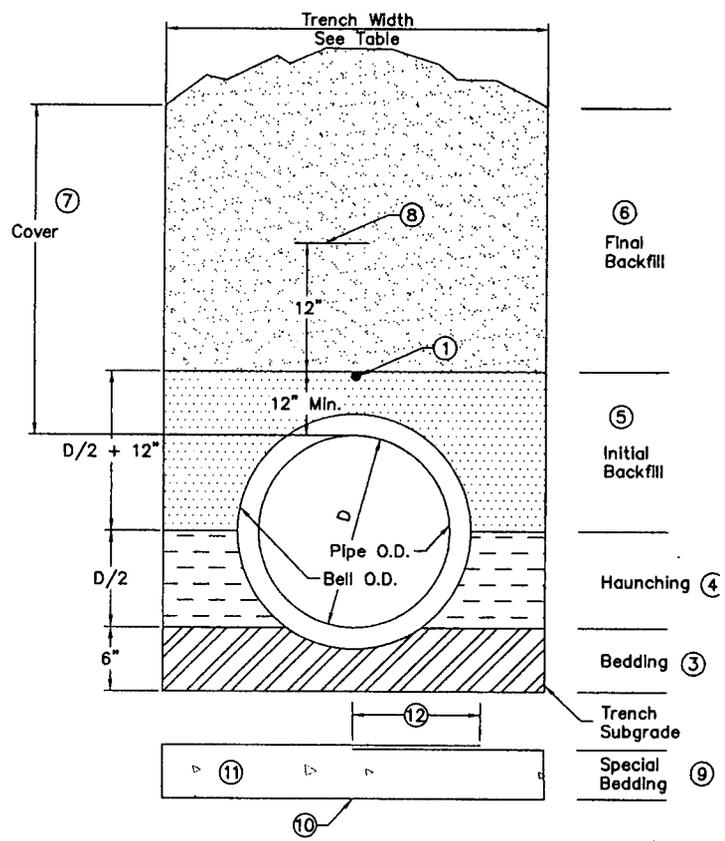


TABLE of STEEL PIPE ENCASEMENT SIZES

NOMINAL CARRIER PIPE DIAMETER (INCHES)	CARRIER PIPE PVC ASTM D-3034			CARRIER PIPE DUCTILE IRON - PUSH JOINT			CARRIER PIPE DUCTILE IRON - MECHANICAL JOINT		
	BELL O.D. (INCHES) (Note 1)	BARREL O.D. (INCHES)	ENCMT I.D. (INCHES) (Note 2)	BELL O.D. (INCHES)	BARREL O.D. (INCHES)	ENCMT I.D. (INCHES) (Note 2)	BELL O.D. (INCHES)	BARREL O.D. (INCHES)	ENCMT I.D. (INCHES) (Note 2)
4	5.2	4.22	9.2	6.86	4.8	10.86	9.12	4.8	13.12
6	7.5	6.28	11.5	8.75	6.9	12.75	11.12	6.9	15.12
8	10.1	8.4	14.1	11.05	9.05	15.05	13.37	9.05	17.37
10	12.4	10.5	16.4	13.15	11.1	17.15	15.62	11.1	19.62
12	14.5	12.5	18.5	15.3	13.2	19.3	17.88	13.2	21.88

NOTES

1. PVC Bell O.D. based on JM Pipe Green Tite. Bell OD may vary with manufacturer.
2. See Table of Minimum Wall Thickness to determine Nominal Casing O.D.

TABLE of MINIMUM WALL THICKNESS for STEEL PIPE ENCASEMENTS

STEEL ENC O.D. (INCHES)	MIN. WALL THICKNESS (INCHES)	PIPE I.D. (INCHES)
6.625	0.188	6.249
8.625	0.188	8.249
10.75	0.188	10.374
12.75	0.188	12.374
14	0.188	13.624
16	0.219	15.562
18	0.250	17.500
20	0.281	19.438
22	0.281	21.438
24	0.312	23.376
26	0.344	25.312
28	0.375	27.250
30	0.406	29.188
32	0.438	31.124
34	0.469	33.062
36	0.469	35.062
38	0.500	37.000
40	0.531	38.938
42	0.563	40.874
44	0.594	42.812
46	0.594	44.812
48	0.625	46.750
50	0.656	48.688

NOTES

1. Casing thickness based on Cooper E80 loading.
2. For casing beneath railways, when casing is installed without the benefit of a protective coating or cathodic protection casing wall thickness shown hereon shall be increased to the next largest standard size.



Utility Installation Details

**Details for
Pipe Encasement, Stream Crossings,
Thrust Backing and Anchorage**



**SUMMIT
ENGINEERING
INC.**

PIKEVILLE, KY
LEXINGTON, KY
GRUNDY, VA
LOGAN, WV

SCALE: N.T.S. DATE: 4/14/99

SHEET:

D-2

OF:

DRAWING NO.	PROJECT NO.

TABLE of SERVICE TUBING
ENCASEMENT SIZES

NOMINAL PIPE DIAMETER (INCHES)	COPPER & PE SERVICE TUBING			
	CARRIER PIPE O.D. (INCHES)	NOMINAL ENCASEMENT		
		RR CROSS (STEEL) (INCHES) (Note 1)	STATE HWY (STEEL) (INCHES) (Note 2)	LOCAL STREET (PVC) (INCHES) (Note 3)
0.75	0.875	5	Note 4	Note 4
1	1.125	5	Note 4	Note 4
1.25	1.375	6	3	3
2	2.125	6	4	4

- NOTES
1. Nominal Steel Pipe Size. Minimum wall 0.188 Inches.
 2. Nominal Steel Pipe Size. STD Schedule 40 Steel.
 3. Nominal PVC Pipe Size. STD Schedule 40 PVC.
 4. Encasement not required.

be securely anchored
 AWS:
 1/4" to 3/8"
 1/2" to 5/8"
 3/4" and Over

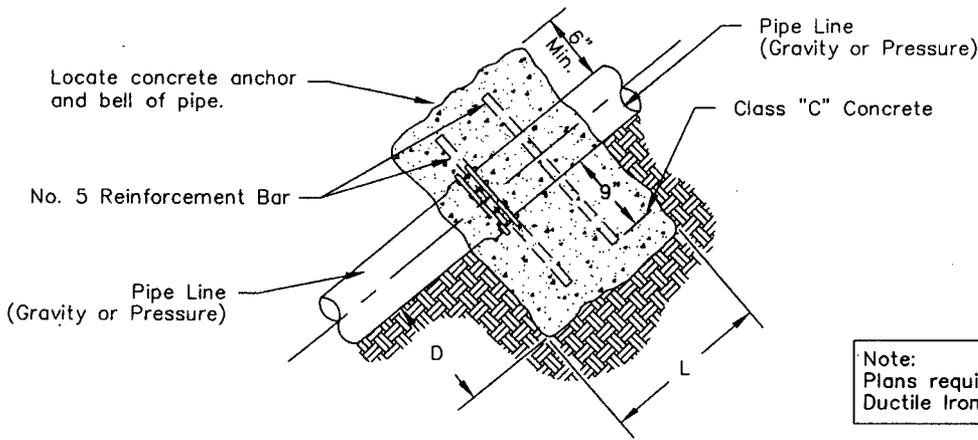
TABLE of STEEL PIPE ENCASEMENT SIZES

NOMINAL CARRIER PIPE DIAMETER (INCHES)	CARRIER PIPE PVC ASTM D-3034			CARRIER PIPE DUCTILE IRON - PUSH JOINT			CARRIER PIPE DUCTILE IRON - MECHANICAL JOINT		
	BELL O.D. (INCHES) (Note 1)	BARREL O.D. (INCHES)	ENCMT I.D. (INCHES) (Note 2)	BELL O.D. (INCHES)	BARREL O.D. (INCHES)	ENCMT I.D. (INCHES) (Note 2)	BELL O.D. (INCHES)	BARREL O.D. (INCHES)	ENCMT I.D. (INCHES) (Note 2)
4	5.2	4.22	9.2	6.86	4.8	10.86	9.12	4.8	13.12
6	7.5	6.28	11.5	8.75	6.9	12.75	11.12	6.9	15.12
8	10.1	8.4	14.1	11.05	9.05	15.05	13.37	9.05	17.37
10	12.4	10.5	16.4	13.15	11.1	17.15	15.62	11.1	19.62
12	14.5	12.5	18.5	15.3	13.2	19.3	17.88	13.2	21.88

- NOTES
1. PVC Bell O.D. based on JM Pipe Green Tite. Bell OD may vary with manufacturer.
 2. See Table of Minimum Wall Thickness to determine Nominal Casing O.D.

TABLE of MINIMUM WALL THICKNESS
for STEEL PIPE ENCASEMENTS

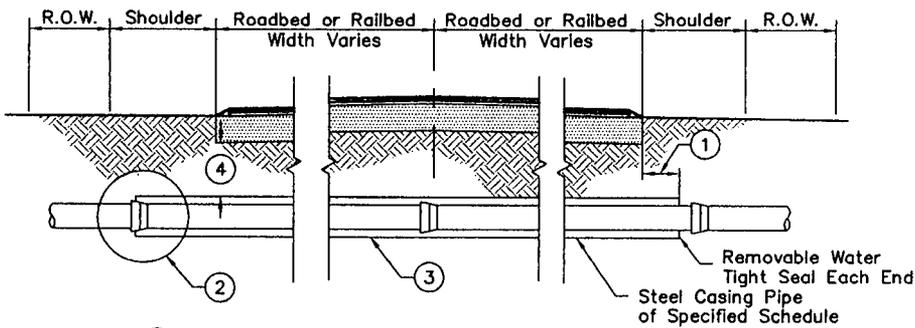
Anchors To Be Full Width of Trench
 Anchors Must Be Placed Against Undisturbed Earth



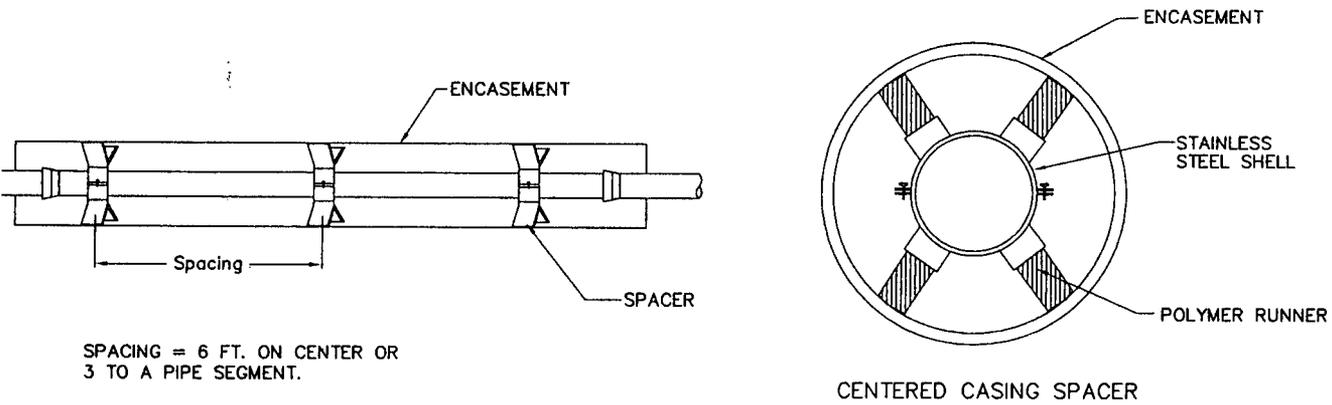
Note:
 Plans require Restrained Mechanical Joint
 Ductile Iron Pipe on steep slopes.

Straight Pipe

CONCRETE ANCHOR BLOCKING
for VERTICAL BENDS and STEEP SLOPES



- ① EXTENSION OF ENCASEMENT BEYOND EDGE OF PAVEMENT AS DESCRIBED IN TECHNICAL SPECIFICATIONS OR PLANS. FIVE FEET BEYOND EDGE OF PAVEMENT FOR HIGHWAYS.
- ② SEE "TYPICAL PIPE CASING SKIDS" DETAIL HEREON.
- ③ ENCASEMENT PIPE I.D. SHALL BE AT LEAST 4" GREATER THAN THE BELL O.D. OF CARRIER PIPE.
- ④ STATE HIGHWAYS 2'-0" BELOW SUBGRADE OR 36" BELOW GRADE, WHICHEVER IS GREATER. RAILROAD 5'-6" BELOW RAIL.



SPACING = 6 FT. ON CENTER OR
 3 TO A PIPE SEGMENT.

CENTERED CASING SPACER

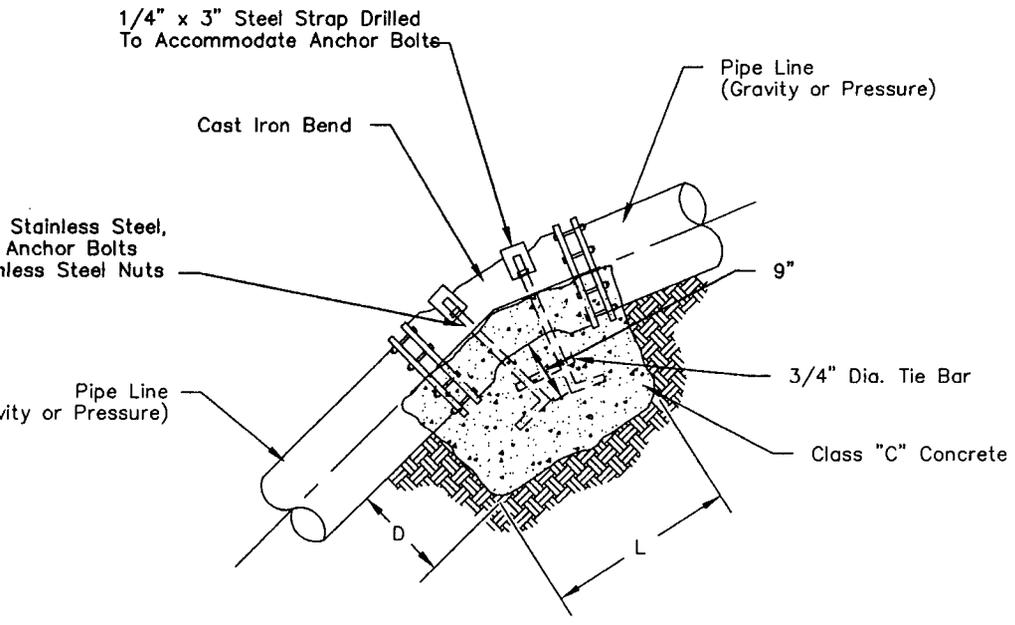
TYPICAL PIPE ENCASEMENT DETAIL

Beaver-Elkhorn Water District
 HALL BRANCH WATER LINE EXTENSION

Floyd County, Kentucky

UT

Pipe Enc
 Thrus

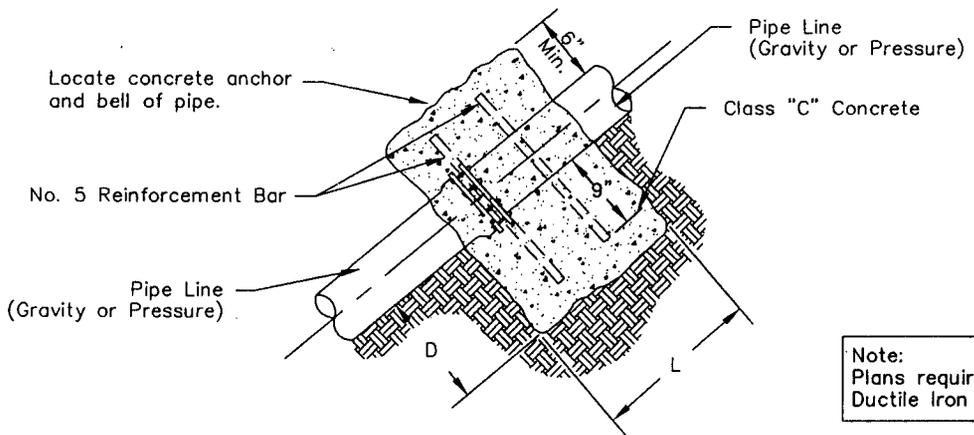


Vertical Bends

VERTICAL BEND & STRAIGHT PIPE							
SIZE	2"	3"	4"	6"	8"	10"	12"
"D"	10"	12"	12"	15"	15"	18"	18"
"L"	12"	18"	18"	24"	24"	30"	30"

Pipes on 20% Slopes or Greater shall be securely anchored with Concrete Anchors Spaced as Follows:
 a) Not Over 36' C-C on Grades of 20% to 35%
 b) Not Over 24' C-C on Grades of 35% to 50%
 c) Not Over 16' C-C on Grades of 50% and Over

Note:
 Anchors To Be Full Width of Trench
 Anchors Must Be Placed Against Undisturbed Earth



Note:
 Plans require Restrained Mechanical Joint Ductile Iron Pipe on steep slopes.

Straight Pipe

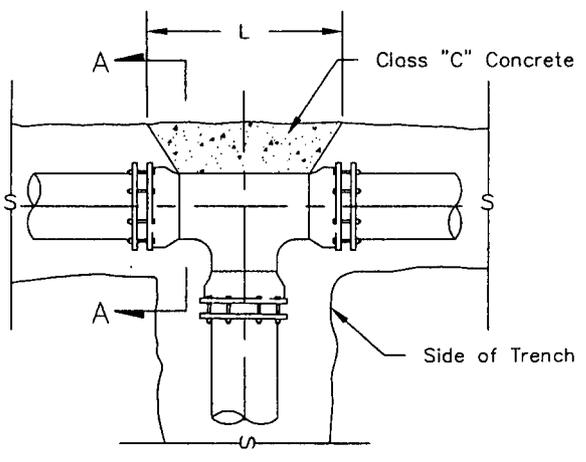
CONCRETE ANCHOR BLOCKING
for VERTICAL BENDS and STEEP SLOPES

Locate concrete and bell of pipe.

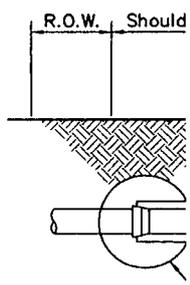
No. 5 Reinforcement

Pipe Line —
(Gravity or Pressure)

COI
for VERT



TEES



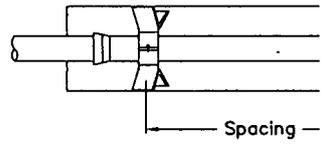
- ①
- ②
- ③
- ④

NOTE : ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT

PLUGS & TEES							
SIZE	2"	3"	4"	6"	8"	10"	12"
D	6"	6"	6"	6"	6"	6"	6"
L & W	14"	16"	18"	20"	22"	24"	24"

(45°) EIGHTH BENDS							
SIZE	2"	3"	4"	6"	8"	10"	12"
D	6"	6"	6"	6"	6"	6"	6"
L	12"	14"	16"	18"	20"	22"	24"
T	10"	12"	14"	16"	16"	18"	18"

(90°) QUARTER BENDS							
SIZE	2"	3"	4"	6"	8"	10"	12"
D	6"	6"	6"	8"	10"	12"	12"
L	15"	18"	21"	24"	27"	30"	34"
T	10"	12"	14"	16"	18"	20"	22"

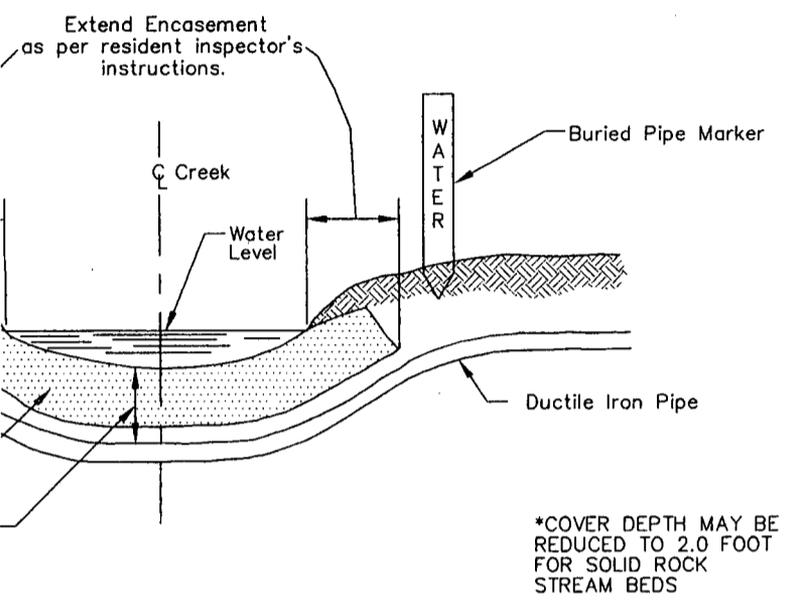


SPACING = 6 FT. C
3 TO A PIPE SEGME

TE THRUST BLOCKING
ESSURIZED PIPE LINES

TYPIC.

REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DRAWN BY: C. Schneider
					CHECKED BY: K. Howard
					APPROVED BY: K. Howard



1/4" x 3" Steel
To Accommodate

Cast Iron

3/4" Dia Stainless Steel,
Threaded Anchor Bolts
With Stainless Steel Nuts

Pipe Line
(Gravity or Pressure)

CREEK CROSSING for
RESSURIZED PIPE

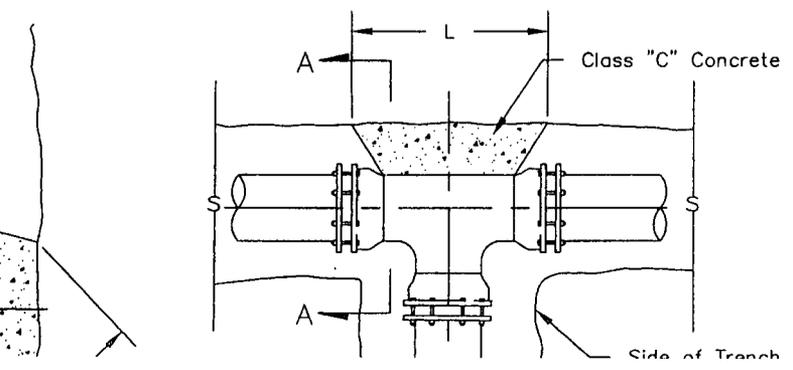
NC
Ar
Ar

Locate concrete and
and bell of pipe.

No. 5 Reinforcement E

Pipe Line
(Gravity or Pressure)

COI
for VERT

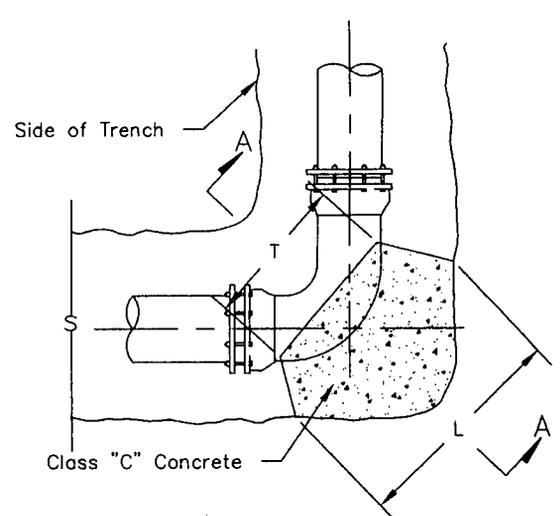


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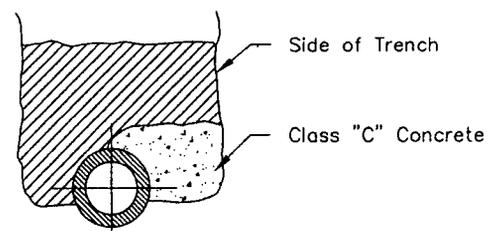
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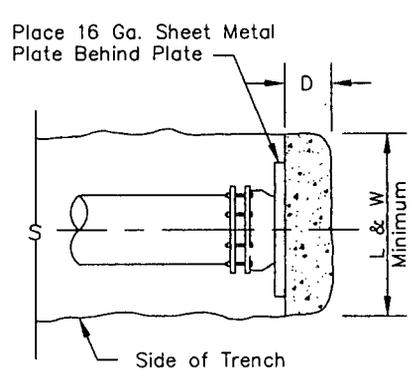
45° & 90° BENDS



Section A-A

NOTE : ALL RES:

SIZE	2'
D	6"
L & W	14"



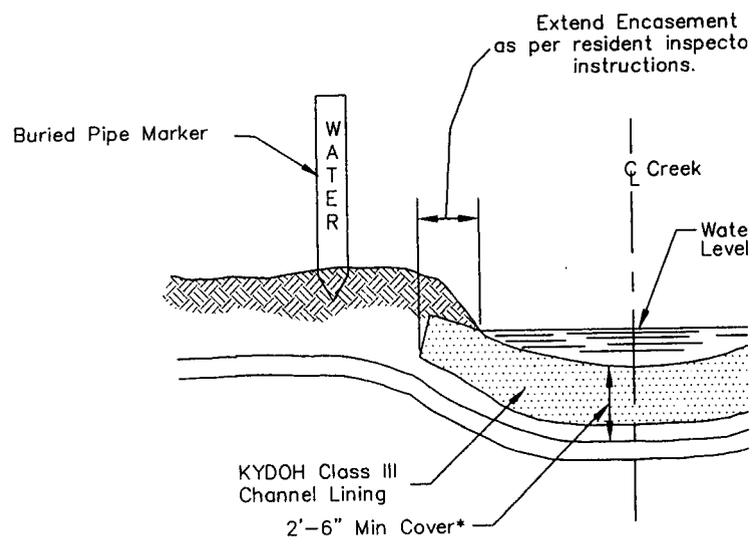
PLUGS

SIZE	2'
D	6"
L	12"
T	10"

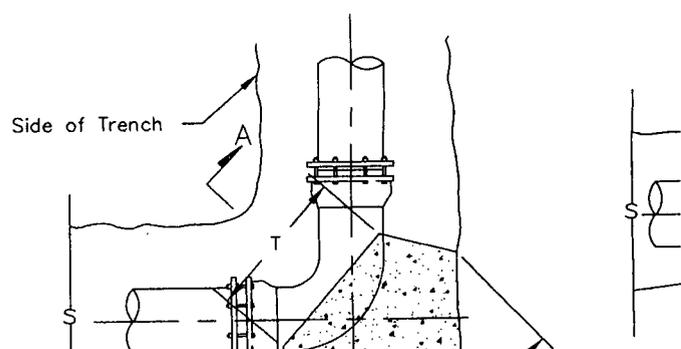
SIZE	2'
D	6"
L	15"
T	10"

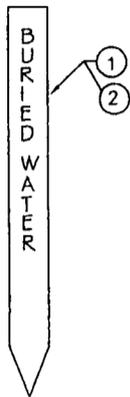
CONCRETE THRUST
for PRESSURIZED P

DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIP



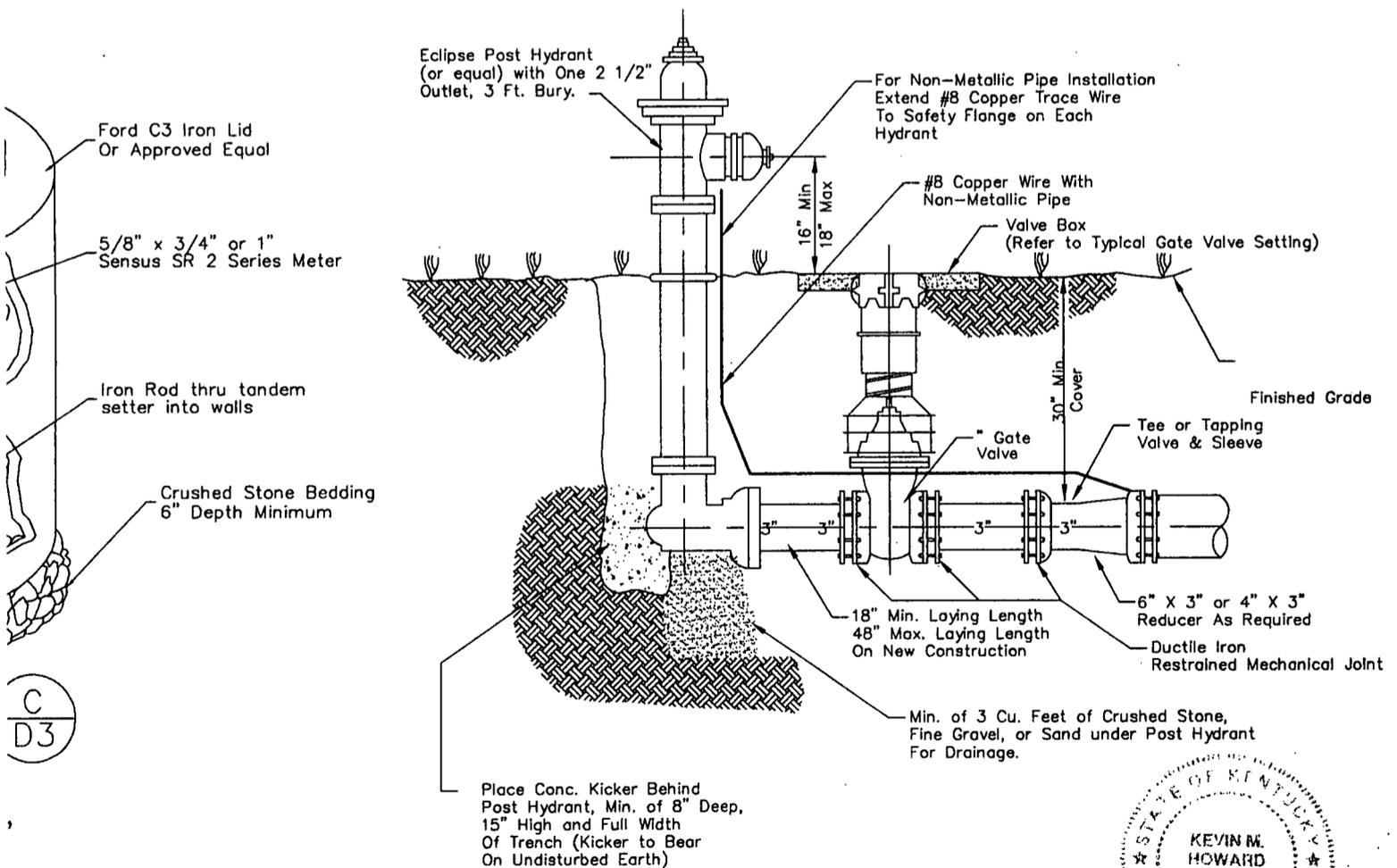
TYPICAL CREEK CROSSING
PRESSURIZED PIPE





- ① Install flexible marker at ends of all roadway bores, at stream crossings, at valves, and other locations designated by Engineer. Flexible marker shall be considered an incidental component of water line and shall NOT be measured for separate payment.
- ② Marker shall denote daytime and emergency phone numbers for utility maintenance personnel. Confirm numbers to appear on marker before ordering.

FLEXIBLE FIBER GLASS LINE MARKER



IT PRV

BLOW OFF

NOTE: REDUCER AND GATE VALVE INCLUDED IN PRICE "EACH" FOR BLOW OFF.

Utility Installation Details
Details for Water Service Connections and Appurtenances

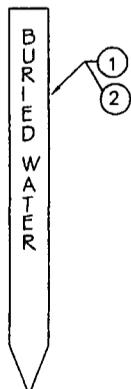


**SUMMIT
ENGINEERING
INC.**

PIKEVILLE, KY
LEXINGTON, KY
GRUNDY, VA
LOGAN, WV

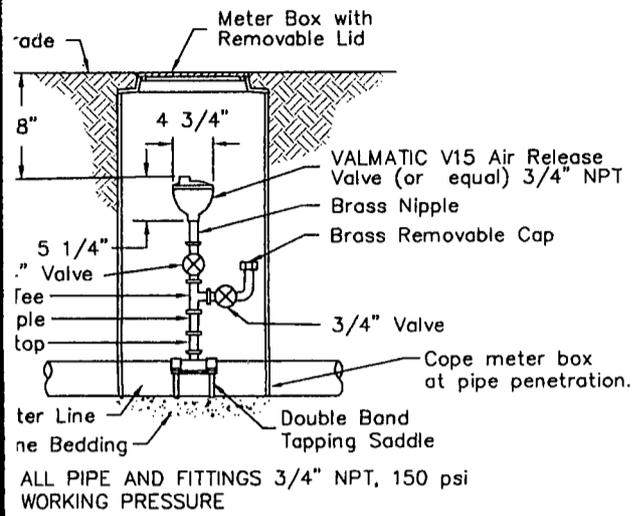
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OF:	

DRAWING NO.	PROJECT NO.

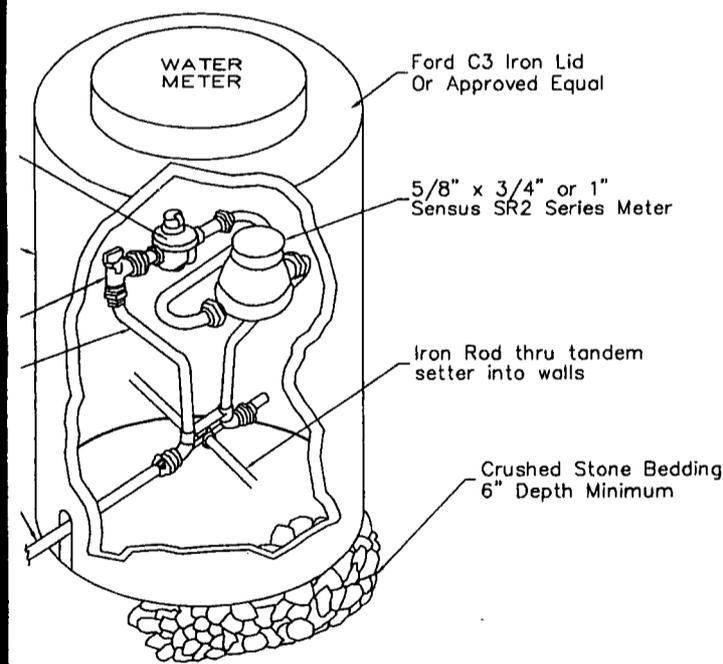


- ① Install flexible marker at ends of all roadway bores, at stream crossings, at valves, and other locations designated by Engineer. Flexible marker shall be considered an incidental component of water line and shall NOT be measured for separate payment.
- ② Marker shall denote daytime and emergency phone numbers for utility maintenance personnel. Confirm numbers to appear on marker before ordering.

FLEXIBLE FIBER GLASS LINE MARKER



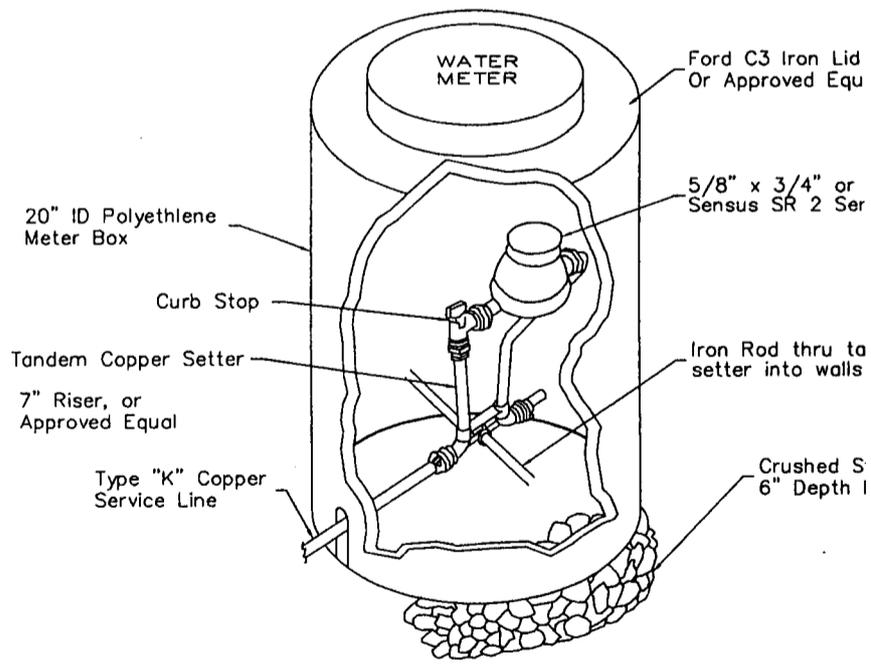
AIR RELEASE



Detail B
Single Set D3
Elevation View

3/4" Or 1"

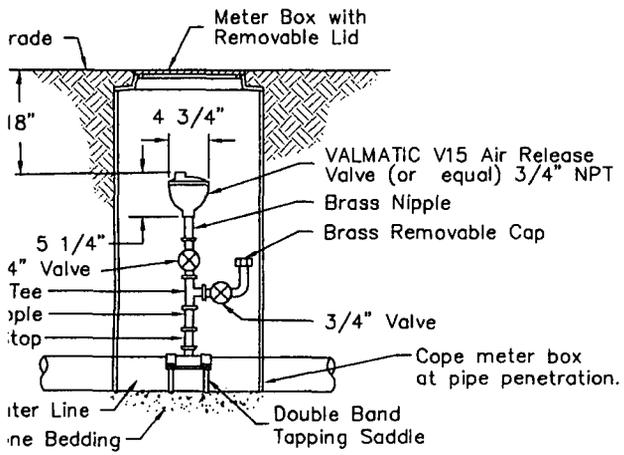
METER WITH PRV



Detail C
Single Set D3
Elevation View

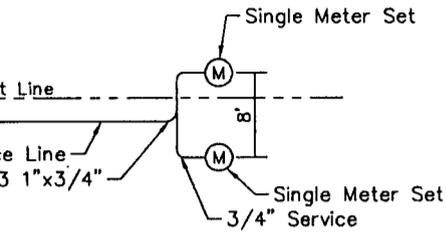
3/4" Or 1"

METER WITHOUT PRV

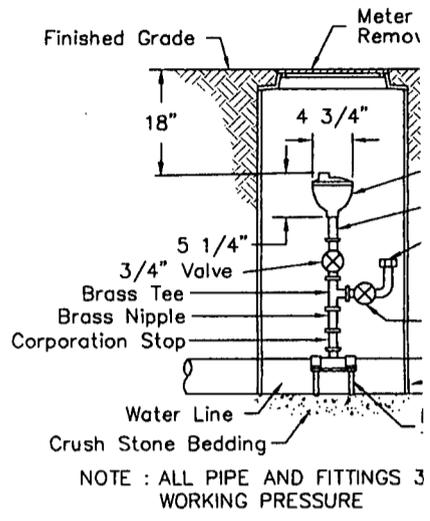


ALL PIPE AND FITTINGS 3/4" NPT, 150 psi
 WORKING PRESSURE

AIR RELEASE



Detail
Tandem Set
Plan View

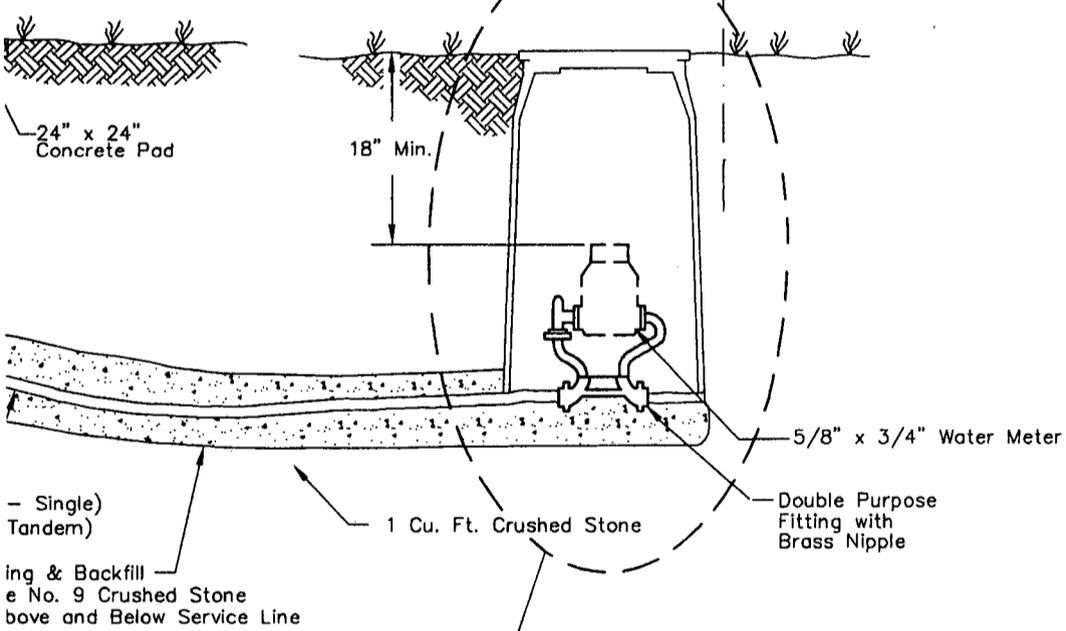


NOTE: ALL PIPE AND FITTINGS 3/4\"/>

AIR RELEASE

Grading & Backfilling Detail

1. Stop with Curb Box: where required.

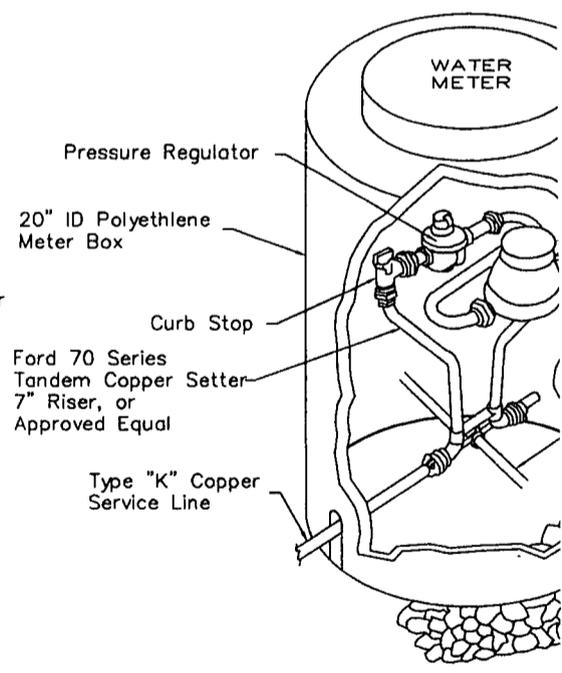
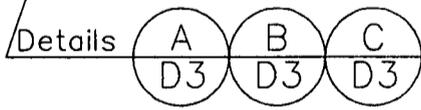


Grading & Backfill with No. 9 Crushed Stone above and Below Service Line

When installed as a Service Line and Meter set, include the pressure regulator saddle, Corporation stop, Meter pressure regulator (if applicable) and curb stop.

The meter may not install it. A dummy meter and meter shall be delivered to the

1/2\"/>



Detail
Single Set
Elevation View

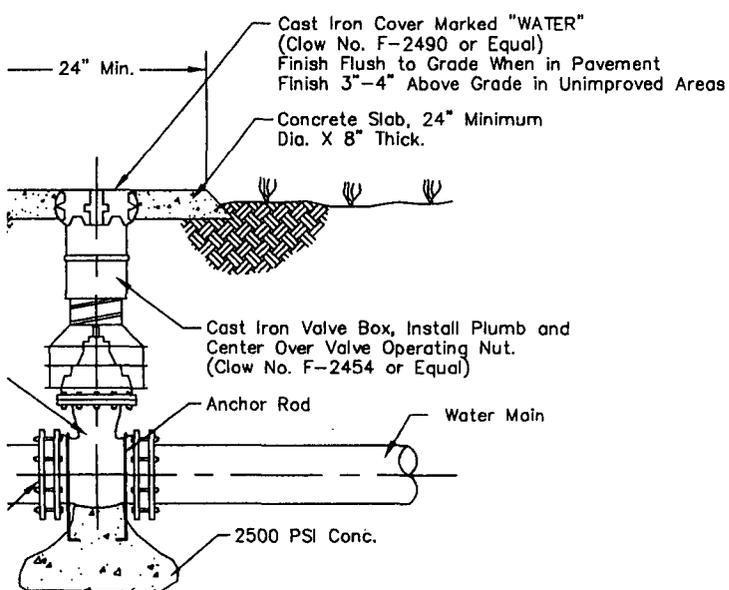
3/4\"/>

METER WITH

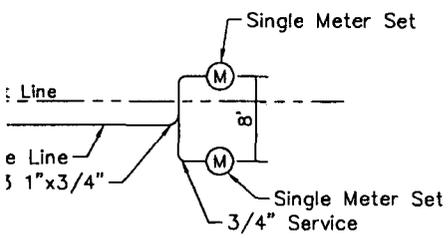
SERVICE CONNECTION

REVISION	DATE	DESCRIPTION OF REVISION	DATE	DESCRIPTION OF REVISION	DRAWN BY:	C. Schneider
					CHECKED BY:	K. Howard
					APPROVED BY:	K. Howard

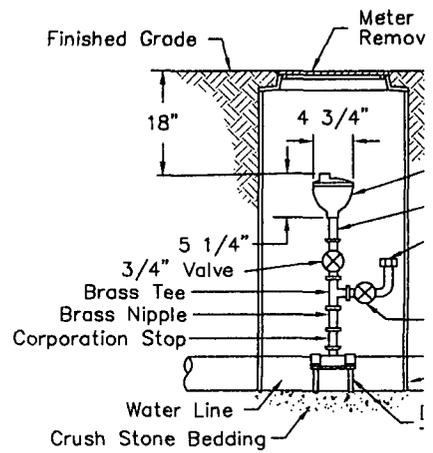
- Flexible fiberglass valve marker



VALVE SETTING



Detail A
Tandem Set
Plan View



NOTE : ALL PIPE AND FITTINGS 3 WORKING PRESSURE

AIR RELEASE

Property Line

Fig & Backfilling Detail

Stop with Curb Box: wherever required

